08oct02 12:09:59 User267149 Session D369.1

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SYSTEM:OS  - DIALOG OneSearch
  File   2:INSPEC  1969-2002/Oct W1
         (c) 2002 Institution of Electrical Engineers
*File   2: Alert feature enhanced for multiple files, duplicates
removal, customized scheduling. See HELP ALERT.
  File   6:NTIS  1964-2002/Oct W1
         (c) 2002 NTIS, Intl Cpyrght All Rights Res
*File   6: Alert feature enhanced for multiple files, duplicates
removal, customized scheduling. See HELP ALERT.
  File   8:Ei Compendex(R)  1970-2002/Sep W5
         (c) 2002 Engineering Info. Inc.
*File   8: Alert feature enhanced for multiple files, duplicates
removal, customized scheduling. See HELP ALERT.
  File  34:SciSearch(R) Cited Ref Sci  1990-2002/Oct W1
         (c) 2002 Inst for Sci Info
*File  34: Alert feature enhanced for multiple files, duplicates
removal, customized scheduling. See HELP ALERT.
  File 434:SciSearch(R) Cited Ref Sci  1974-1989/Dec
         (c) 1998 Inst for Sci Info
  File  35:Dissertation Abs Online  1861-2002/Sep
         (c) 2002 ProQuest Info&Learning
  File  65:Inside Conferences  1993-2002/Oct W1
         (c) 2002 BLDSC all rts. reserv.
  File  94:JICST-EPlus  1985-2002/Aug W1
         (c)2002 Japan Science and Tech Corp(JST)
*File  94: There is no data missing. UDs have been adjusted to reflect
 the current months data. See Help News94 for details.
  File  99:Wilson Appl. Sci & Tech Abs  1983-2002/Aug
         (c) 2002 The HW Wilson Co.
  File 144:Pascal  1973-2002/Oct W1
         (c) 2002 INIST/CNRS
  File 305:Analytical Abstracts  1980-2002/Sep W4
         (c) 2002 Royal Soc Chemistry
*File 305: Alert feature enhanced for multiple files, duplicate
removal, customized scheduling.  See HELP ALERT.
  File 315:ChemEng & Biotec Abs  1970-2002/Aug
         (c) 2002 DECHEMA
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Set     Items   Description
S1       2348   AU=(MURAMATSU, M? OR MURAMATSU M?)
S2         15   S1 AND ((IMAGE? ? OR IMAGING)(3N)(PICKUP OR PICK()UP OR MO-
               NITOR????? OR MEASUR???? OR TEST??? OR CHECK???? OR EXAMIN???-
               ?? OR ANALYS???? OR ANALYZ???? OR VERIF???? OR INDENTIF???? OR
                 DETECT????? OR SENS?????))
S3          0   S2 AND ((PHOTOSENS??????? OR PHOTO()SENS??????)(3N)(REGION-
               ??? OR AREA? ?))
S4          0   S2 AND (PHOTODETECT?????? OR PHOTO()DETECT?????? OR PD)
S5          1   S2 AND ((PHOTODIODE??? OR PHOTO()DIODE??? OR PHOTODIODE???
               OR PHOTO()DIODE???? OR DIODE???))
S6         14   RD S2 (unique items)
S7       2333   S1 NOT S2
S8         78   S7 AND ((OPTIC???????? OR ELECTRO()OPTIC??????? OR OPTO()E-
               LECTRON?????))
S9          1   S8 AND SEMICONDUCT?????
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5/3,AB/1 (Item 1 from file: 94)
DIALOG(R)File 94:JICST-EPlus

00473563 JICST ACCESSION NUMBER: 87A0437972 FILE SEGMENT: JICST-E
Touch scanner.
MURAMATSU MASAHIDE (1)
(1) Nippondenso Co., Ltd.
Keisoku Gijutsu(Instrumentation and Automation), 1987, VOL.15,NO.9,
PAGE.48-52, FIG.13, TBL.1
JOURNAL NUMBER: S0852AAH ISSN NO: 0385-9886
UNIVERSAL DECIMAL CLASSIFICATION: 681.327.2
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Commentary
MEDIA TYPE: Printed Publication

6/3,AB/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

6584210 INSPEC Abstract Number: A2000-12-4230-007, B2000-06-6135E-082, C2000-06-1250M-093
Title: Surfaces analysis based on subfringe integral method
Author(s): Melao, I.; Goncalves, E.; **Muramatsu, M.**
Author Affiliation: Depto. de Engenharia Mecanica, Sao Paulo Univ., Brazil
Journal: Proceedings of the SPIE - The International Society for Optical Engineering Conference Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA) vol.3749 p.779-80
Publisher: SPIE-Int. Soc. Opt. Eng,
Publication Date: 1999 Country of Publication: USA
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(1999)3749L.779:SABS;1-5
Material Identity Number: C574-1999-257
U.S. Copyright Clearance Center Code: 0277-786X/99/$10.00
Conference Title: 18th Congress of the International Commission for Optics
Conference Sponsor: SPIE
Conference Date: 2-6 Aug. 1999 Conference Location: San Francisco, CA, USA
Language: English
Abstract: We show that the most used techniques for fringe analysis and our present novel technique based on sub-fringe integral method with carrier frequencies, for phase retrieval. This method integrates one fringe into various sub-fringes to obtain the phase value. Several experiments were performed to obtain the information of flatness and profile from the surface to be analyzed.
Subfile: A B C

6/3,AB/2 (Item 2 from file: 2)
DIALOG(R)File 2:INSPEC

6022695 INSPEC Abstract Number: A9820-0768-006
Title: Metering system of camera using Color-CCD-sensor
Author(s): **Muramatsu, M.**
Author Affiliation: Dept. of Dev. & Eng., Nikon Corp., Tokyo, Japan
Journal: Journal of the Society of Photographic Science and Technology of Japan vol.60, no.5 p.307-10
Publisher: Tokyo Inst. Polytech,
Publication Date: Oct. 1997 Country of Publication: Japan
CODEN: NSGKAP ISSN: 0369-5662
SICI: 0369-5662(199710)60:5L.307:MSCU;1-4
Material Identity Number: D931-98002
Language: Japanese
Abstract: It has been developed photometric system of camera included photometric units which divided a photographic scene into multiple areas in which to perform classification of a photographic scene, and extracting a proper exposure value. We develop the new photometric system for the advance of photometric performance which sensor consisting of a 1005-pixel Color-CCD. Each pixel has one R, G, or B filter, so the sensor discriminates not only each scene's brightness and contrast also the scene's colors.
Subfile: A

6/3,AB/3 (Item 3 from file: 2)
DIALOG(R)File 2:INSPEC

6006167 INSPEC Abstract Number: B9810-7230G-013
Title: Electron bombardment CCD tube
Author(s): Suyama, M.; Kageyama, A.; Mizuno, I.; Kinoshita, K.; **Muramatsu, M.**; Yamamoto, K.
Author Affiliation: Electron Tube Center, Hamamatsu Photonics KK, Japan
Journal: Proceedings of the SPIE - The International Society for Optical Engineering Conference Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA) vol.3173 p.422-9
Publisher: SPIE-Int. Soc. Opt. Eng,
Publication Date: 1997 Country of Publication: USA
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(1997)3173L.422:EBT;1-8
Material Identity Number: C574-98063
U.S. Copyright Clearance Center Code: 0277-786X/97/$10.00
Conference Title: Ultrahigh- and High-Speed Photography and Image-based Motion Measurement
Conference Sponsor: SPIE
Conference Date: 28-30 July 1997 Conference Location: San Diego, CA, USA
Language: English
Abstract: For low light level imaging application, a proximity focused electron bombardment CCD (EB-CCD) tube has been developed. In the tube, electrons emitted from the multi-alkali (S-20) photocathode in response to incident light are accelerated by the electric field and bombarded the specially processed CCD which is sensitive to electrons. The electron bombardment gain is 600 at applied voltage of -8 kV to the photocathode. Single photon counting operation is possible, because the gain is larger than the readout noise and the dark noise of the CCD. The spatial resolution is better than 360 TV lines, which is the theoretical limit of the full frame transfer CCD (FFT-CCD) of 512 by 512 pixels. No major degradation of either the photocathode sensitivity or the incorporated CCD was observed during the operation for a few tens hours. The life of the EB-CCD tube is under evaluation.
Subfile: B

6/3,AB/4 (Item 4 from file: 2)
DIALOG(R)File 2:INSPEC

5728461 INSPEC Abstract Number: A9723-0630C-004, B9712-7320C-003
Title: Application of a liquid crystal spatial light modulator on optical roughness measurements by a speckle correlation method using two refractive indices
Author(s): **Muramatsu, M.**; Eiju, T.; Shirai, T.; Matsuda, K.
Author Affiliation: Inst. de Fisica, Sao Paulo Univ., Brazil
Journal: Optics and Laser Technology vol.29, no.5 p.271-3
Publisher: Elsevier,
Publication Date: July 1997 Country of Publication: UK
CODEN: OLTCAS ISSN: 0030-3992
SICI: 0030-3992(199707)29:5L.271:ALCS;1-5
Material Identity Number: O028-97006
U.S. Copyright Clearance Center Code: 0030-3992/97/$17.00+0.00
Language: English
Abstract: A system of roughness measurements using a CCD camera and a liquid crystal spatial light modulator (LCSLM) has been developed. The scattered light patterns from the surface, which is covered by liquids with several different refractive indices, are acquired by the CCD camera and stored in a frame grabber in a computer. The superposition of two arbitrary patterns is calculated by the computer and displayed on the LCSLM. It is then illuminated by coherent light to produce interference fringes of equal inclination at infinity. The surface roughness can be determined through the relationship between the fringe visibility and the difference of refractive indices. The performance of this system is estimated by experiments.
Subfile: A B

6/3,AB/5 (Item 1 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

09166852 Genuine Article#: 374VH Number of References: 15
Title: RIKEN integrated sequence analysis (RISA) system-384-format sequencing pipeline with 384 multicapillary sequencer (ABSTRACT AVAILABLE)
Author(s): Shibata K; Itoh M; Aizawa K; Nagaoka S; Sasaki N; Carninci P; Konno H; Akiyama J; Nishi K; Kitsunai T; Tashiro H; Itoh M; Sumi N; Ishii Y; Nakamura S; Hazama M; Nishine T; Harada A; Yamamoto R; Matsumoto H; Sakaguchi S; Ikegami T; Kashiwagi K; Fujiwake S; Inoue K; Togawa Y; Izawa M; Ohara E; Watahiki M; Yoneda Y; Ishikawa T; Ozawa K; Tanaka T; Matsuura S; Kawai J; Okazaki Y; **Muramatsu M**; Inoue Y; Kira A; Hayashizaki Y (REPRINT)
Corporate Source: RIKEN,GENOME EXPLORAT RES GRP/TSUKUBA/IBARAKI 3000074/JAPAN/ (REPRINT); RIKEN,GENOME EXPLORAT RES GRP/TSUKUBA/IBARAKI 3000074/JAPAN/; RIKEN,GSC/TSUKUBA/IBARAKI 3000074/JAPAN/; RIKEN,GENOME SCI LAB/TSUKUBA/IBARAKI 3000074/JAPAN/; JAPAN SCI & TECHNOL CORP,CREST, TSUKUBA INST/TSUKUBA/IBARAKI 3000074/JAPAN/; RIKEN,ADV ENGN CTR/WAKO/SAITAMA 35110198/JAPAN/; UNIV TSUKUBA,SCH MED/TSUKUBA/IBARAKI 3058575/JAPAN/; NIPPON GENE CO LTD,RES & DEV/TOYAMA 9300834//JAPAN/; WAKO PURE CHEM IND LTD,OSAKA RES LABS/AMAGASAKI/HYOGO 6610963/JAPAN/; RIKEN,HARIMA INST/SAYOU/HYOUGO 6795148/JAPAN/; RIKEN,/WAKO/SAITAMA 3510198/JAPAN/
Journal: GENOME RESEARCH, 2000, V10, N11 (NOV), P1757-1771
ISSN: 1088-9051 Publication date: 20001100
Publisher: COLD SPRING HARBOR LAB PRESS, 1 BUNGTOWN RD, PLAINVIEW, NY 11724
Language: English Document Type: LETTER
Abstract: The RIKEN high-throughput 384-format sequencing pipeline (RISA system) including a 384-multicapillary sequencer (the so-called RISA sequencer) was developed For the RIKEN mouse encyclopedia project. The RISA system consists of colony picking, template preparation, sequencing reaction, and the sequencing process. A novel high-throughput 384-format capillary sequencer system (RISA sequencer system) was developed for the sequencing process. This system consists of a 384-multicapillary auto sequencer (RISA sequencer), a 384-multicapillary array assembler (CAS), and a 384-multicapillary casting device. The RISA sequencer can simultaneously analyze 384 independent sequencing products. The optical system is a scanning system chosen after careful comparison with an **image detection** system for the simultaneous detection of the 384-capillary array. This scanning system can be used with any fluorescent-labeled sequencing reaction (chain termination reaction), including transcriptional sequencing based on RNA polymerase, which was originally developed by us, and cycle sequencing based on thermostable DNA polymerase. For long-read sequencing, 380 out of 384 sequences (99.2%) were successfully analyzed and the average read length, with more than 99% accuracy, was 654.4 bp. A single RISA sequencer can analyze 216 kb with >99% accuracy in 2.7 h (90 kb/h). For short-read sequencing to cluster the 3' end and 5' end sequencing by reading 350 bp, 384 samples can be analyzed in 1.5 h. We have also developed a RISA inoculator, RISA filtrator and densitometer, RISA plasmid preparator

which can handle throughput of 40,000 samples in 17.5 h, and a high-throughput RISA thermal cycler which has four 384-well sites. The combination of these technologies allowed us to construct the RISA system consisting of 16 RISA sequencers, which can process 50,000 DNA samples per day. One haploid genome shotgun sequence of a higher organism, such as human, mouse, rat domestic animals, and plants, can be revealed by seven RISA systems within one month.

6/3,AB/6 (Item 1 from file: 94)
DIALOG(R)File 94:JICST-EPlus

05200865 JICST ACCESSION NUMBER: 02A0591693 FILE SEGMENT: JICST-E
Development of Autonomous Mobile Robot for Inspection of Inner Surface of Pipes.
MURAMATSU MASAHIRO (1); KOYAMA RITSUO (1); TSUBOUCHI SHINKO (1); KAN YASUO (2)
(1) Grad. Sch., Keio Univ.; (2) Keio Univ.
Nippon Kikai Gakkai Robotikusu, Mekatoronikusu Koenkai Koen Ronbunshu, 2001, VOL.2001,NO.Pt.2, PAGE.1P1.M9(1)-1P1.M9(2), FIG.7, REF.5
JOURNAL NUMBER: L0318AAB
UNIVERSAL DECIMAL CLASSIFICATION: 007.52:621
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Conference Proceeding
ARTICLE TYPE: Short Communication
MEDIA TYPE: Printed Publication
ABSTRACT: Study on Autonomous Mobile Robot for inspection of inner surface of pipes makes up for decreasing piping engineers. The robot has a spherical shape for purpose to run in a complex route including elbow joint, T-joint and cross joint with bending angle of 90. It can also turn back in a blind pipe. The robot is controlled by a host personal computer and one-chip microcomputers. The robot has a camera to inspect inner surface of pipe and recognize a route in which the robot runs. As a result of running test, the robot moved stably in joints, and accordingly it is confirmed that this system has enough availability and effectiveness. (author abst.)

6/3,AB/7 (Item 2 from file: 94)
DIALOG(R)File 94:JICST-EPlus

04607231 JICST ACCESSION NUMBER: 00A0534568 FILE SEGMENT: JICST-E
A model of radiation balance near ground level in forest for satellite data analysis.
MURAMATSU KANAKO (1); **MURAMATSU MOMOKO** (1); FUJIWARA NOBORU (1)
(1) Nara Women's Univ., Fac. of Sci.
Nippon Rimoto Senshingu Gakkai Gakujutsu Koenkai Ronbunshu(Proceedings of the Japanese Conference on Remote Sensing), 2000, VOL.28th, PAGE.175-176, FIG.3, REF.2
JOURNAL NUMBER: X0715AAG
UNIVERSAL DECIMAL CLASSIFICATION: 53.083.7 630*12
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Conference Proceeding
ARTICLE TYPE: Short Communication
MEDIA TYPE: Printed Publication
ABSTRACT: We developed a model of radiation balance near ground level for land area such as concrete, asphalt, soil, grass and tree. The model dose not work well for tree. To improve the model for tree or forest, we measure the leaf temperature and air temperature of near canopy and inside the canopy in forests. We improve the model and apply the data to the model. (author abst.)

6/3,AB/12 (Item 7 from file: 94)
DIALOG(R)File 94:JICST-EPlus

01585567 JICST ACCESSION NUMBER: 92A0591920 FILE SEGMENT: JICST-E
Double-Neck View-Finder Tube.
KAWASAKI MASAKI (1); KUBO MASAYUKI (1); **MURAMATSU MASASHI** (1)
(1) Matsushita Electronics Corp.
Natl Tech Rep, 1992, VOL.38,NO.4, PAGE.408-415, FIG.14, TBL.6, REF.3
JOURNAL NUMBER: G0474AAH ISSN NO: 0028-0291 CODEN: NTROA
UNIVERSAL DECIMAL CLASSIFICATION: 621.385.83 621.397.61
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Original paper
MEDIA TYPE: Printed Publication
ABSTRACT: With the growth of the home video-camera market, smaller size, lighter weight, lower power consumption and higher resolution picture quality of the camera are strongly demanded. Also for the view-finder tube (miniature CRT) of the camera, similar performance is required. In response to this, an innovative view-finder tube with double-neck bulb structure has been developed. It reduces the length by about 26%, the weight by about 33%, and the power consumption by about 18% as compared with the conventional type. Besides, the direct-heating coil heater cathode developed for this tube allows immediate starting of display, and reduces the filament power consumption by 93%. (author abst.)

6/3,AB/14 (Item 9 from file: 94)
DIALOG(R)File 94:JICST-EPlus

00473563 JICST ACCESSION NUMBER: 87A0437972 FILE SEGMENT: JICST-E
Touch scanner.
MURAMATSU MASAHIDE (1)
(1) Nippondenso Co., Ltd.
Keisoku Gijutsu(Instrumentation and Automation), 1987, VOL.15,NO.9,
PAGE.48-52, FIG.13, TBL.1
JOURNAL NUMBER: S0852AAH ISSN NO: 0385-9886
UNIVERSAL DECIMAL CLASSIFICATION: 681.327.2
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Commentary
MEDIA TYPE: Printed Publication
?

9/3,AB/1 (Item 1 from file: 94)
DIALOG(R)File 94:JICST-EPlus

03392413 JICST ACCESSION NUMBER: 97A1033091 FILE SEGMENT: JICST-E
Technical Situation for Camera. Metering System of Camera Using Color-CCD-Sensor.
MURAMATSU MASARU (1)
(1) Nikon Corp.
Nippon Shashin Gakkaishi(Journal of the Society of Photographic Science and Technology of Japan), 1997, VOL.60,NO.5, PAGE.307-310, FIG.8
JOURNAL NUMBER: G0165AAU ISSN NO: 0369-5662 CODEN: NSGKA
UNIVERSAL DECIMAL CLASSIFICATION: 771.3/.4
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Short Communication
MEDIA TYPE: Printed Publication
ABSTRACT: It has been developed photometric system of camera included photometric units which divided a photographic scene into multiple areas in which to perform classification of a photographic scene, and extracting a proper exposure value. We develop the new photometric system for the advance of photometric performance which sensor consisting of a 1,005-pixel Color-CCD. Each pixel has one R, G, or B filter, so the sensor discriminates not only each scene's brightness and contrast also the scene's colors. (author abst.)

10/08/2002 09/974,817

FILE 'INPADOC, JAPIO, WPIX, PATOSWO, PATOSEP, HCAPLUS' ENTERED AT 10:46:05 ON 08 OCT 2002

E JP304182/PN
E JP0304182/PN
E JP00304182/PN
E 1997JP-304182/AP,PRN
L1 4 S E4
E 1999JP-105442/AP,PRN
L2 8 S E4

FOREIGN PRIORITY

LEVEL 1
AN 169687287 INPADOC ED 20020319 EW 200211 UP 20020319 UW 200211
TI SEMICONDUCTOR DEVICE
IN MURAMATSU MASAHARU
INS MURAMATSU MASAHARU
INA JP
PA HAMAMATSU PHOTONICS K.K.
PAS HAMAMATSU PHOTONICS KK
PAA US
DT Patent
PIT USAA PATENT APPLICATION PUBLICATION (PRE-GRANT)
PI US 2002020859 AA 20020221
AI US 2001-974817 A 20011012
PRAI **JP 1999-105442 A 19990413**
WO 2000-JP2424 W 20000413
ICM (7) H01L029-768
NCL 257228

L2 ANSWER 2 OF 8 INPADOC COPYRIGHT 2002 EPO

LEVEL 1
AN 168058771 INPADOC ED 20020218 EW 200207 UP 20020218 UW 200207
TI SEMICONDUCTOR DEVICE
IN MURAMATSU, MASAHARU
INS MURAMATSU MASAHARU
INA JP
PA HAMAMATSU PHOTONICS K.K.
PAS HAMAMATSU PHOTONICS KK
PAA JP
TL English; French; German
LA English
DT Patent
PIT EPA1 PUBL. OF APPLICATION WITH SEARCH REPORT
PI EP 1179851 A1 20020213
DS R: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
AI EP 2000-917308 A 20000413
PRAI WO 2000-JP2424 W 20000413
JP 1999-105442 A 19990413
ICM (7) H01L027-146
ICS (7) H01L031-0352; (7) G01J001-02; (7) G01J003-36

L2 ANSWER 3 OF 8 INPADOC COPYRIGHT 2002 EPO

LEVEL 1
AN 145631137 INPADOC ED 20010305 EW 200108 UP 20020218 UW 200207
TI SEMICONDUCTOR DEVICE
IN MASAHARU MURAMATSU
INS MURAMATSU MASAHARU
PA HAMAMATSU PHOTONICS K.K.
PAS HAMAMATSU PHOTONICS KK
DT Patent
PIT AUA5 COMP. SPEC. OPEN TO PUB. INSP.
PI AU 2000038372 A5 20001114

AI AU 2000-38372 A 20000413
PRAI **JP 1999-105442 A 19990413**
WO 2000-JP2424 W 20000413
ICM (7) H01L027-146
ICS (7) H01L031-0352; (7) G01J001-02; (7) G01J003-36

L2 ANSWER 4 OF 8 INPADOC COPYRIGHT 2002 EPO

LEVEL 1
AN 138027031 INPADOC ED 20001031 EW 200043 UP 20020218 UW 200207
TI SEMICONDUCTOR DEVICE
IN MURAMATSU, MASAHARU
INS MURAMATSU MASAHARU
INA JP
PA HAMAMATSU PHOTONICS K.K.; MURAMATSU, MASAHARU
PAS HAMAMATSU PHOTONICS KK; MURAMATSU MASAHARU
PAA JP; JP
TL English; French
LA Japanese
DT Patent
PIT WOA1 PUBL.OF THE INT.APPL. WITH INT.SEARCH REPORT
PI WO 2000062344 A1 20001019
DS RW: GH GM KE LS MW SD SL SZ TZ UG ZW AM AZ BY KG KZ MD RU TJ TM AT BE CH
CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE BF BJ CF CG CI CM GA GN
GW ML MR NE SN TD TG
W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES FI
GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU
LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR
TT TZ UA UG US UZ VN YU ZA ZW
AI WO 2000-JP2424 A 20000413
PRAI **JP 1999-105442 A 19990413**
OSDW 2001-040785
ICM (7) H01L027-146
ICS (7) H01L031-0352; (7) G01J001-02; (7) G01J003-36
EPC H01L27/148P

L2 ANSWER 5 OF 8 WPIX (C) 2002 THOMSON DERWENT
AN 2001-040785 [05] WPIX
DNN N2001-030438 DNC C2001-011757
TI Charge coupled device, has array of first and second cells on first and second substrates respectively, with indium-gallium arsenide photodiode on second substrate.
DC L03 S03 U13
IN MURAMATSU, M
PA (HAMM) HAMAMATSU PHOTONICS KK
CYC 91
PI WO 2000062344 A1 20001019 (200105)* JA 40p H01L027-146
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL
OA PT SD SE SL SZ TZ UG ZW
W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES
FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS
LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL
TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
AU 2000038372 A 20001114 (200108) H01L027-146

EP 1179851 A1 20020213 (200219) EN H01L027-146
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI
US 2002020859 A1 20020221 (200221) H01L029-768
JP 2000611318 X 20020723 (200263) H01L027-14

ADT WO 2000062344 A1 WO 2000-JP2424 20000413; AU 2000038372 A AU 2000-38372 20000413; EP 1179851 A1 EP 2000-917308 20000413, WO 2000-JP2424 20000413; US 2002020859 A1 CIP of WO 2000-JP2424 20000413, US 2001-974817 20011012; JP 2000611318 X JP 2000-611318 20000413, WO 2000-JP2424 20000413

FDT AU 2000038372 A Based on WO 200062344; EP 1179851 A1 Based on WO 200062344; JP 2000611318 X Based on WO 200062344

PRAI **JP 1999-105442 19990413**

IC ICM H01L027-14; H01L027-146; H01L029-768
ICS G01J001-02; G01J003-36; H01L031-00; H01L031-0352

AB WO 200062344 A UPAB: 20010124
NOVELTY - A CCD has, in a plan view, part of a first photoelectric conversion region overlapping part of a second photoelectric conversion region of an InGaAs photodiode.

DETAILED DESCRIPTION - A CCD unit is formed on the front surface side (11b) of a thin portion (12) on a first substrate. An array of first cells are disposed in the extending direction of the thin portion. An InGaAs photodiode is provided on a second substrate (21), having an array of second cells of the same pitch and direction as the first cells. The first and second substrates overlap each other with the surface of the first substrate facing the second incident surface (21a) of the second substrate. In a plan view, part of a first photoelectric conversion region of the CCD unit overlaps part of a second photoelectric conversion region of the InGaAs photodiode.

USE - For a CCD device.

DESCRIPTION OF DRAWING(S) - The drawing shows a perspective view of the device.

first substrate 11
front surface side 11a
thin portion 12
second substrate 21
second incident surface 21a

Dwg.1/10

FS CPI EPI
FA AB; GI
MC CPI: L04-A02D; L04-E05F
EPI: S03-A01B1; S03-A02A; U13-A01A; U13-A02A

L2 ANSWER 6 OF 8 PATOSWO COPYRIGHT 2002 WILA
AN 2000:1061866 PATOSWO ED 20001026 EW 200042 FS OS
TI SEMICONDUCTOR DEVICE.
IN MURAMATSU, Masaharu, Hamamatsu Photonics K.K., 1126-1, Ichino-cho, Hamamatsu-shi, Shizuoka-ken 435-8558, JP
PA HAMAMATSU PHOTONICS K.K., 1126-1, Ichino-cho, Hamamatsu-shi, Shizuoka-ken 435-8558, JP (except US);
MURAMATSU, Masaharu, Hamamatsu Photonics K.K., 1126-1, Ichino-cho, Hamamatsu-shi, Shizuoka-ken 435-8558, JP (only US
AG HASEGAWA, Yoshiki et al., Soei Patent and Law Firm, Okura-Honkan, 6-12, Ginza 2-chome, Chuo-ku, Tokyo 104-0061, JP
OS MIWO2000204 WO 0062344 A1 0040

SO Wila-IPA-2000-H42-T2
DT Patent
LA Application in Japanese
DS W AE; W AL; W AM; W AT; W AU; W AZ; W BA; W BB; W BG; W BR; W BY; W CA; W CH; W CN; W CR; W CU; W CZ; W DE; W DK; W DM; W EE; W ES; W FI; W GB; W GD; W GE; W GH; W GM; W HR; W HU; W ID; W IL; W IN; W IS; W JP; W KE; W KG; W KP; W KR; W KZ; W LC; W LK; W LR; W LS; W LT; W LU; W LV; W MA; W MD; W MG; W MK; W MN; W MW; W MX; W NO; W NZ; W PL; W PT; W RO; W RU; W SD; W SE; W SG; W SI; W SK; W SL; W TJ; W TM; W TR; W TT; W TZ; W UA; W UG; W US; W UZ; W VN; W YU; W ZA; W ZW;
RW AT; RW BE; RW CH; RW CY; RW DE; RW DK; RW ES; RW FI; RW FR; RW GB; RW GR; RW IE; RW IT; RW LU; RW MC; RW NL; RW PT; RW SE; RW AM; RW AZ; RW BY; RW KG; RW KZ; RW MD; RW RU; RW TJ; RW TM; RW GH; RW GM; RW KE; RW LS; RW MW; RW SD; RW SL; RW SZ; RW TZ; RW UG; RW ZW; RW BF; RW BJ; RW CF; RW CG; RW CI; RW CM; RW GA; RW GN; RW GW; RW ML; RW MR; RW NE; RW SN; RW TD; RW TG
PIT WOA1 PCT-PUBLICATION
PI WO 2000062344 A1 20001019
OD 20001019
AI WO 2000-JP2424 20000413
PRAI **JP 1999-105442 19990413**
IC ICM H01L027-146
ICS H01L031-0352 G01J001-02 G01J003-36
ABEN A CCD unit (14) is provided on the front surface side (11b) of a thin shape portion (12) formed on a first substrate. In the CCD unit (14), first cells (15(EXP=1 to n)) are disposed in an array in the extending direction of the thin shape portion (12). An InGaAs photo-diode (22) is provided on a second substrate (21), and in the InGaAs photo-diode (22), second cells (23(EXP=1 to n)) are disposed in an array with the same pitch as that of the first cells (15) and in the same direction as that of the first cells (15(EXP=1 to n)). The first substrate (11) and second substrate (21) are overlapped each other with the surface (11b) of the first substrate (11) facing the second incident surface (21a) of the second substrate (21) so that, in a plan view, part of a first photoelectric conversion region (15) of the CCD unit (14) correspondingly overlap part of a second photoelectric conversion region (23) of the InGaAs photo-diode (22).
FA ICS; AG; INA; PAA; ABEN; PRAI

L2 ANSWER 7 OF 8 PATOSEP COPYRIGHT 2002 WILA

PATENT APPLICATION

AN 2000:1427061 PATOSEP ED 20020221 EW 200207 FS OS
TIEN SEMICONDUCTOR DEVICE.
IN MURAMATSU, Masaharu Hamamatsu Photonics K.K., 1126-1, Ichino-cho, Hamamatsu-shi Shizuoka-ken 435-8558, JP
PA Hamamatsu Photonics K.K., 1126-1, Ichino-cho, Hamamatsu-shi, Shizuoka-ken 435-8558, JP
PAN 631421
AG Whitten, George Alan et al., R.G.C. Jenkins & Co., 26 Caxton Street, London SW1H 0RJ, GB
AGN 71691
OS BEPA2002016 EP 1179851 A1 0025

SO Wila-EPZ-2002-H07-T2b
DT Patent
LA Anmeldung in Japanisch; Veroeffentlichung in Englisch; Verfahren in Englisch
DS R AT; R BE; R CH; R CY; R DE; R DK; R ES; R FI; R FR; R GB; R GR; R IE; R IT; R LI; R LU; R MC; R NL; R PT; R SE; R AL; R LT; R LV; R MK; R RO; R SI
PIT EPA1 EUROPAEISCHE PATENTANMELDUNG (Internationale Anmeldung)
PI EP 1179851 A1 20020213
OD 20020213
AI EP 2000-917308 20000413
PRAI **JP 1999-105442 19990413**
RLI WO 00-JP2424 000413 INTAKZ
WO 0062344 001019 INTPNR
IC ICM H01L027-146
ICS H01L031-0352 G01J001-02 G01J003-36
MCLMEN 1. A semiconductor device comprising:
a first back-illuminated semiconductor image pickup element; and
a second semiconductor image pickup element made of a semiconductor material different from that of said first back-illuminated semiconductor image pickup element, wherein said first back-illuminated semiconductor image pickup element is disposed such that respective photosensitive regions of said first back-illuminated semiconductor image pickup element and said second semiconductor image pickup element are adjacent to each other.
ABEN A CCD unit is provided on the surface 11b side of a thin shape section that is formed on a first substrate. In the CCD unit, first cells are provided and disposed in the form of an array in a direction in which the thin shape section extends. An InGaAs photodiode unit is provided at a second substrate 21: in the InGaAs photodiode unit, second cells are provided and disposed in an array in the same direction as the first cells while having equal pitches to the first cells. The first substrate and second substrate are stacked over each other in such a manner that the surface of the first substrate and a second incidence plane of the second substrate oppose each other to ensure that part of a first photoelectric conversion region of the CCD unit correspondingly overlap part of a second photoelectric conversion region of the InGaAs photodiode unit 22 when seen in plan view.
FA I1; PRAI; ICS; AG; INA; PAA; AGA; AGN; PAN; RLI; MCLMEN; ABEN

LEGAL STATUS

AN 2000:1427061 PATOSEP ED 20020221 EW 200207 FS RS
SO EP-PB-2002-H07
DT Historie
PIT EPLU LEGAL STATUS, UPDATE
PI EP 1179851 AL 20020213
LSEN EP-Bul Code Text
020213 AD Application date 000413
020213 OD Laid open date (publication) of A-Doc.
020213 EX-RQ Examination requested 011106
FA LS

L2 ANSWER 8 OF 8 HCAPLUS COPYRIGHT 2002 ACS

AN 2000:737215 HCAPLUS
TI Semiconductor device
IN Muramatsu, Masaharu
PA HAMAMATSU PHOTONICS K.K., Japan
SO PCT Int. Appl.
CODEN: PIXXD2
DT Patent
LA Japanese
IC ICM H01L027-146
ICS H01L031-0352; G01J001-02; G01J003-36
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000062344	A1	20001019	WO 2000-JP2424	20000413 <--
	W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	EP 1179851	A1	20020213	EP 2000-917308	20000413 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	US 2002020859	A1	20020221	US 2001-974817	20011012 <--
PRAI	JP 1999-105442	A	19990413 <--		
	WO 2000-JP2424	W	20000413		

AB A CCD unit (14) is provided on the front surface side (11b) of a thin shape portion (12) formed on a first substrate. In the CCD unit (14), first cells (15<<dol<<doliquest<<dol<<doll to n) are disposed in an array in the extending direction of the thin shape portion (12). An InGaAs photo-diode (22) is provided on a second substrate (21), and in the InGaAs photo-diode (22), second cells (23<<dol<<doliquest<<dol<<doll to n) are disposed in an array with the same pitch as that of the first cells (15) and in the same direction as that of the first cells (15<<dol<<doliquest<<dol<<doll to n). The first substrate (11) and second substrate (21) are overlapped each other with the surface (11b) of the first substrate (11) facing the second incident surface (21a) of the second substrate (21) so that, in a plan view, part of a first photoelectric conversion region (15) of the CCD unit (14) correspondingly overlap part of a second photoelectric conversion region (23) of the InGaAs photo-diode (22).

RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Fuji Photo Film Co Ltd; JP 10256613 A 1998
(2) Mitsubishi Electric Corporation; JP 222973 A 1990
(3) Mitsubishi Electric Corporation; JP 223782 A 1990
(4) Mitsubishi Heavy Industries Ltd; JP 05133796 A 1993
(5) Nec Corporation; JP 02147826 A 1990
(6) Satake Eng Co Ltd; JP 09304182 A 1997

LEVEL 1
AN 115528741 INPADOC ED 19991005 EW 199939 UP 20001120 UW 200046
TI CAPACITOR AND MANUFACTURE THEREOF
IN UENO IWAO; TANAHASHI MASAKAZU
INS UENO IWAO; TANAHASHI MASAKAZU
PA MATSUSHITA ELECTRIC IND CO LTD
PAS MATSUSHITA ELECTRIC IND CO LTD
TL English
DT Patent
PIT JPA2 DOCUMENT LAID OPEN TO PUBLIC INSPECTION
PI JP 11219843 A2 19990810
AI JP 1998-314256 A 19981105
PRAI JP 1998-314256 A 19981105
JP 1997-304182 A 19971106
OSCA 131:178520
OSDW 2000-468040
ICM (6) H01G004-12
ICS (6) H01G004-12

L1 ANSWER 2 OF 4 JAPIO COPYRIGHT 2002 JPO
AN 1999-219843 JAPIO
TI CAPACITOR AND MANUFACTURE THEREOF
IN UENO IWAO; TANAHASHI MASAKAZU
PA MATSUSHITA ELECTRIC IND CO LTD
PI JP 11219843 A 19990810 Heisei
AI JP 1998-314256 (JP10314256 Heisei) 19981105
PRAI **JP 1997-304182**19971106
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1999
IC ICM H01G004-12
ICS H01G004-12
AB PROBLEM TO BE SOLVED: To provide a grain-boundary insulation-type capacitor with a large capacity.
SOLUTION: A ceramic sintered body 2 has a plurality of inner electrodes 3 with Ni as the main component in the inside. Each other electrode 4 connected electrically with the inner electrodes 3 is provided at both end faces of a ceramic sintered body 2. The outer electrode 4 has at least a double structure having Ni as a main component in an inner layer 4a and has an Ag- or Cu as a main component in an outer layer 4b. The ceramic sintered body 2 is of grain-boundary insulation type and contains at least one from among metal oxides of Li, Na or K in the grain boundary.
COPYRIGHT: (C)1999,JPO

L1 ANSWER 3 OF 4 WPIX (C) 2002 THOMSON DERWENT
AN 2000-468040 [41] WPIX
DNN N2000-349427 DNC C2000-141206
TI Electrode structure for grain boundary insulation type capacitor - includes sintering electrodes with at least one oxide among lithium, sodium, potassium existing in grain boundary of ceramic sintered compact.
DC L03 V01
PA (MATU) MATSUSHITA DENKI SANGYO KK
CYC 1
PI JP 11219843 A 19990810 (200041)* 34p H01G004-12
ADT JP 11219843 A JP 1998-314256 19981105

PRAI **JP 1997-304182 19971106**
IC ICM H01G004-12
AB JP 11219843 A UPAB: 20000831
NOVELTY - The external and internal electrodes (3,4) are electrically connected and sintered at their ends to form ceramic sintered compact (2). One of the oxides among lithium, sodium and potassium exists in the grain boundary of the compact. DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for electrode manufacture for capacitor.
USE - For grain boundary insulation type capacitor.
ADVANTAGE - The structure of the capacitor is insulated thereby apparent dielectric constant is improved and capacitance is increased.
DESCRIPTION OF DRAWING(S) - The figure represents sectional view of capacitor. (2) Ceramic sintered compact; (3) External electrode; (4) Internal electrode.
Dwg.1/6
FS CPI EPI
FA AB; GI
MC CPI: L03-B03
EPI: V01-B03A

L1 ANSWER 4 OF 4 HCAPLUS COPYRIGHT 2002 ACS
AN 1999:498758 HCAPLUS
DN 131:178520
TI Manufacture of electric capacitors
IN Ueno, Iwao; Tanahashi, Masakazu
PA Matsushita Electric Industrial Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 34 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01G004-12
ICS H01G004-12
CC 76-10 (Electric Phenomena)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11219843	A2	19990810	JP 1998-314256	19981105 <--
PRAI	JP 1997-304182		19971106 <--		

AB Double-layer external electrodes based on Ag or Cu are formed on the both ends of sintered ceramic bodies with Ni-based inner electrodes.
ST elec capacitor silver copper electrode; nickel electrode elec capacitor
IT Capacitors
Electrodes
(manuf. of elec. capacitors with Ni-based internal electrodes)
IT 497-19-8, Sodium carbonate, uses 554-13-2, Lithium carbonate 584-08-7, Potassium carbonate 1302-42-7, Aluminum sodium oxide (AlNaO2) 1310-58-3, Potassium hydroxide, uses 1310-73-2, Sodium hydroxide, uses 1313-59-3, Sodium oxide, uses 6834-92-0 10006-28-7, Potassium silicate (K2SiO3) 12003-63-3, Potassium aluminate (KAlO2) 12003-67-7, Lithium aluminum oxide (LiAlO2) 12047-27-7, Barium titanate, uses 12057-24-8, Lithium oxide, uses 12136-45-7, Potassium oxide, uses
RL: DEV (Device component use); USES (Uses)
(manuf. of elec. capacitors with Ni-based internal electrodes)
IT 7440-22-4, Silver, processes 7440-50-8, Copper, processes

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(manuf. of elec. capacitors with external electrodes based on)

IT 7440-02-0, Nickel, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(manuf. of elec. capacitors with internal electrodes based on)

08oct02 12:55:27 User267149 Session D370.1

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SYSTEM:OS  - DIALOG OneSearch
  File   2:INSPEC  1969-2002/Oct W1
         (c) 2002 Institution of Electrical Engineers
*File   2: Alert feature enhanced for multiple files, duplicates
removal, customized scheduling. See HELP ALERT.
  File   6:NTIS  1964-2002/Oct W1
         (c) 2002 NTIS, Intl Cpyrght All Rights Res
*File   6: Alert feature enhanced for multiple files, duplicates
removal, customized scheduling. See HELP ALERT.
  File   8:Ei Compendex(R)  1970-2002/Sep W5
         (c) 2002 Engineering Info. Inc.
*File   8: Alert feature enhanced for multiple files, duplicates
removal, customized scheduling. See HELP ALERT.
  File  34:SciSearch(R) Cited Ref Sci  1990-2002/Oct W1
         (c) 2002 Inst for Sci Info
*File  34: Alert feature enhanced for multiple files, duplicates
removal, customized scheduling. See HELP ALERT.
  File 434:SciSearch(R) Cited Ref Sci  1974-1989/Dec
         (c) 1998 Inst for Sci Info
  File  35:Dissertation Abs Online  1861-2002/Sep
         (c) 2002 ProQuest Info&Learning
  File  65:Inside Conferences  1993-2002/Oct W1
         (c) 2002 BLDSC all rts. reserv.
  File  94:JICST-EPlus  1985-2002/Aug W1
         (c)2002 Japan Science and Tech Corp(JST)
*File  94: There is no data missing. UDs have been adjusted to reflect
 the current months data. See Help News94 for details.
  File  99:Wilson Appl. Sci & Tech Abs  1983-2002/Aug
         (c) 2002 The HW Wilson Co.
  File 144:Pascal  1973-2002/Oct W1
         (c) 2002 INIST/CNRS
  File 305:Analytical Abstracts  1980-2002/Sep W4
         (c) 2002 Royal Soc Chemistry
*File 305: Alert feature enhanced for multiple files, duplicate
removal, customized scheduling.  See HELP ALERT.
  File 315:ChemEng & Biotec Abs  1970-2002/Aug
         (c) 2002 DECHEMA
  File 350:Derwent WPIX  1963-2002/UD,UM &UP=200263
         (c) 2002  Thomson Derwent
*File 350: Alerts can now have images sent via all delivery methods.
See HELP ALERT and HELP PRINT for more info.
  File 347:JAPIO  Oct 1976-2002/Jun(Updated 021004)
         (c) 2002 JPO & JAPIO
*File 347: JAPIO data problems with year 2000 records are now fixed.
Alerts have been run.  See HELP NEWS 347 for details.
  File 344:Chinese Patents Abs  Aug 1985-2002/Sep
         (c) 2002 European Patent Office
  File 371:French Patents  1961-2002/BOPI 200209
         (c) 2002 INPI.  All rts. reserv.
*File 371: This file is not currently updating. The last update is 200209.
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Set	Items	Description
S1	3658	BACK???(3N)(ILLUMINAT?????? OR BRIGHT??????)
S2	2386916	SEMICONDUCT?????
S3	7296	CC=B2560 Semiconductor devices
S4	5086	MC=S01-G02B
S5	100067	IC=G01R-031
S6	2465143	S2:S5
S7	550125	CCD OR CAMERA? ?
S8	534761	(IMAGE? ? OR IMAGING)(3N)(PICKUP OR PICK()UP OR MONITOR???-?? OR MEASUR???? OR TEST??? OR CHECK???? OR EXAMIN????? OR AN-ALYS???? OR ANALYZ???? OR VERIF???? OR INDENTIF???? OR DETEC-T????? OR SENS?????)
S9	4298	(PHOTOSENS??????? OR PHOTO()SENS??????)(3N)(REGION??? OR A-REA? ?)
S10	12407	(ONE OR FIRST OR TWO OR SECOND)(3N)(PHOTOSENS??????? OR PH-OTO()SENS??????)
S11	318231	PHOTODETECT?????? OR PHOTO()DETECT?????? OR PD
S12	42960	(PHOTOELECTR?????? OR PHOTO()ELECTR??????)(3N)(CONVERS????-?? OR CONVERT??????)
S13	373481	S9:S12
S14	701568	(PHOTODIODE??? OR PHOTO()DIODE??? OR DIODE???)
S15	8428	MC=(T03-B02B3 OR T03-B02A OR S03-A01B1)
S16	709470	S14:S15
S17	233015	OPPOSIT??????(3N)(SIDE? ? OR FACE? ? OR SURFACE??)
S18	949	MC=(S02-A06A3 OR S02-F01G)
S19	2150	IC=(G01B-011/03 OR G01L-001/24 OR S02-F01X)
S20	394541	(OPTIC???????? OR ELECTRO()OPTIC??????? OR OPTO()ELECTRON?-????)(3N)(MONITOR????? OR MEASUR???? OR TEST??? OR CHECK???? - OR EXAMIN????? OR ANALYS???? OR ANALYZ???? OR VERIF???? OR IN-DENTIF???? OR DETECT????? OR SENS?????)
S21	627613	S17:S20
S22	656112	(WAVELENGTH?? OR WAVE()LENGTH?? OR WL)
S23	53897	(WAVELENGTH?? OR WAVE()LENGTH?? OR WL)(3N)RANG????
S24	2242	MC=S03-A02A
S25	657394	S22:S24
S26	296520	LIGHT??????(3N)(UNIT? ? OR SOURCE? ?)
S27	1141636	LIGHT()EMITTING()(DIOD? ? OR DEVICE? ?) OR LED OR LUMIN???-??????
S28	5227	CC=B4260 Electroluminescent devices
S29	3227	MC=(S02-K04C OR S04-B04A OR S06-A03E1 OR S06-B01B2A OR T01--C04C)
S30	78220	IC=(G01D-007 OR G04C OR G04G OR G03G-013/04 OR G03G-015/04 OR G03B-003 OR T01-C04)
S31	40328	LIGHT??????(3N)RAY???
S32	1488133	S26:S31
S33	483243	(ONE OR FIRST OR TWO OR SECOND)(3N)(STAG??? OR LEVEL???)
S34	123575	(ONE OR FIRST OR TWO OR SECOND)(3N)SUBSTRATE? ?
S35	37909	(STACK?????? OR LAMINAT?????? OR OVERLAP???????)(3N)(SUBST-RAT? ? OR REGION????)
S36	638827	S33:S35
S37	565	S1 AND S2
S38	96	S37 AND S7
S39	49	S38 AND S8

S40	4	S39 AND S13
S41	4	RD (unique items)
S42	45	S39 NOT S40
S43	4	S42 AND S16
S44	4	RD (unique items)
S45	41	S42 NOT S44
S46	2	S45 AND S21
S47	39	S45 NOT S46
S48	6	S47 AND S25
S49	6	RD (unique items)
S50	33	S47 NOT S48
S51	0	S50 AND S32
S52	0	S50 AND S36
S53	28	RD S50 (unique items)
S54	3	IDPAT (sorted in duplicate/non-duplicate order)
S55	3	IDPAT (primary/non-duplicate records only)
S56	25	S53 NOT S54
S57	25	RD (unique items)
S58	17846	S7 AND S13
S59	3527981	(OPTIC???????? OR ELECTRO()OPTIC??????? OR OPTO()ELECTRON?- ????)
S60	3529091	S59,S18:S20
S61	8226	S58 AND S60
S62	69	S61 AND S17
S63	5	S62 AND S25
S64	5	RD (unique items)
S65	64	S62 NOT S64
S66	31	S65 AND S32
S67	2	S66 AND S36
S68	29	S66 NOT S67
S69	5	S68 AND S6
S70	5	RD (unique items)
S71	24	S68 NOT S70
S72	24	S71 AND S7
S73	24	RD (unique items)
S74	22	IDPAT (sorted in duplicate/non-duplicate order)
S75	22	IDPAT (primary/non-duplicate records only)

41/3,AB/1 (Item 1 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

03037158
E.I. Monthly No: EIM9103-011074
Title: Charge-coupled devices for quantitative confocal microscopy of the eye.
Author: Masters, Barry R.; Bruchman, Tim; Xiao, G. Q.; Kino, Gordon S.
Corporate Source: Georgia Inst of Technology, Atlanta, GA, USA
Conference Title: Charge-Coupled Devices and Solid State Optical Sensors
Conference Location: Santa Clara, CA, USA Conference Date: 19900212
E.I. Conference No.: 13861
Source: Proceedings of SPIE - The International Society for Optical Engineering v 1242. Publ by Int Soc for Optical Engineering, Bellingham, WA, USA. p 48-58
Publication Year: 1990
CODEN: PSISDG ISSN: 0277-786X ISBN: 0-8194-0289-3
Language: English
Abstract: The use of charge-coupled devices (**CCD**) for quantitative microscopy has advantages over standard video **detectors**. For quantitative **imaging** in the life sciences the use of CCDs have the following advantages: it is a quantitative **photodetector**, with a large dynamic range and high quantum efficiency. The advantage of a large dynamic range of the order 16,000:1 (14-bits) is important in confocal microscopy where there are regions of extremely low light intensity and regions with high intensity. The linear factor of the dynamic range is important for quantitation of the images. Another important property for biological imaging is sensitivity. The use of **back- illuminated** , UV enhanced coatings, thinned **CCD** devices, with anti-reflection coatings all result in higher quantum efficiencies. Slow scan devices can be used in a special mode to capture an image in less than a video frame, however, they are most useful as linear integrating light detectors. In order to demonstrate some of the useful properties of **CCD** detectors, we have used a **CCD detection** system to **image** low light level signals from living transparent biological material. A **CCD camera** was coupled to a confocal microscope and images were collected in reflected light. The samples included the cornea, and the in situ ocular lens. The quality of the images is demonstrated over a wide range of light levels. The images of the eye at submicron resolution clearly demonstrate the advantages of using a solid state charge-coupled device detector for quantitative confocal reflected light microscopy of thick, transparent ocular tissue. (Author abstract) 24 Refs.

41/3,AB/2 (Item 1 from file: 94)
DIALOG(R)File 94:JICST-EPlus

02284817 JICST ACCESSION NUMBER: 95A0111634 FILE SEGMENT: JICST-E
64*64 FPA with Cutoff Wavelength of 10.6 .MU.m Using LPE-Grown HgCdTe.
AWAMOTO K (1); KAJIHARA N (1); SUDO G (1)
(1) Fujitsu Lab., Ltd.
Fujitsu Sci Tech J, 1994, VOL.30,NO.2, PAGE.129-136, FIG.15, TBL.4, REF.6
JOURNAL NUMBER: S0076AAR ISSN NO: 0016-2523 CODEN: FUSTA
UNIVERSAL DECIMAL CLASSIFICATION: 621.397.61 621.383.5
LANGUAGE: English COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Original paper
MEDIA TYPE: Printed Publication
ABSTRACT: The characteristics of mercury cadmium telluride (MCT) photovoltic detectors will make them the dominant device type in future infrared imaging systems. This paper describes a **back illuminated** 64*64-element photodiode array which improves on existing devices. Carrier concentration in the p-type MCT layer was optimized to maximize charge injection efficiency into the Si **CCD** readout circuit to more than 99.3%. Excellent uniformity of characteristics of the photodiode array was achieved by using liquid phase epitaxial (LPE) MCT, grown with a tipping method, and by passivating the photodiode array with an anodic sulfide of MCT. An average product of zero-bias resistance and area (R0A) of 9.1 .OMEGA.cm2 was obtained with a cutoff wavelength of 10.6 .MU.m at 77 K. Line address readout gave a large charge storage capacity of 4*107 electrons. Noise equivalent temperature difference (NETD) was 0.08 K with F/2.5 optics. A crosswise drain structure around each photosensitive n+ on p diode reduced crosstalk from photogenerated carriers spreading laterally into the epitaxial layer. This crosswise drain structure increased the modulation transfer function (MTF) at the Nyquist spatial frequency from the conventional 35% to 60%. (author abst.)

41/3,AB/3 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

010395950
WPI Acc No: 1995-297263/199539
XRPX Acc No: N96-391837
Driving method for **photoelectric converter** having increased photodiode capacitance - applying pulse voltage to reflecting plate electrode, and having photodiode forming unitary picture element of **CCD image sensor**, with light from rear surface being incident on platinum silicide film
Patent Assignee: NEC CORP (NIDE)
Inventor: TANABE A; TOHYAMA S
Number of Countries: 002 Number of Patents: 003
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 7193205	A	19950728	JP 93330293	A	19931227	199539	B
US 5565676	A	19961015	US 94358015	A	19941216	199647	
			US 95467305	A	19950606		
US 5598016	A	19970128	US 94358015	A	19941216	199710	

Priority Applications (No Type Date): JP 93330293 A 19931227
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 7193205	A		4	H01L-027/14	
US 5565676	A		7	G01J-005/02	Div ex application US 94358015
US 5598016	A		7	H01L-027/148	

Abstract (Basic): US 5565676 A
The method of driving the **back-illuminated** type **photoelectric conversion** device of the type comprises a reflecting plate electrode disposed, via an insulating film, in opposition to a photodiode formed on a **semiconductor** substrate of the **photoelectric conversion** device for reflecting light incident from the substrate side through the photodiode and the insulating film toward the photodiode side, where the reflecting plate electrode is grounded,
A pulse voltage is applied to the reflecting plate electrode at a given timing in such a manner that the potential of the reflecting electrode at the time of resetting of the photodiode potential is lower than that obtained at the time when the photodiode charge is accumulated.
ADVANTAGE - Achieves effective absorption of incident light. Platinum silicide film can be utilised as photodiode capacitance. Optically optimum thickness is assured.
Dwg.2,3/4
Abstract (Equivalent): US 5598016 A
A **back-illuminated** type **photoelectric conversion** device comprising a reflecting plate disposed, via an insulating film, in opposition to a charge accumulation-type photodiode formed on a **semiconductor** substrate of the **photoelectric**

conversation device for reflecting light incident from the substrate side through said photodiode and said insulating film toward the photodiode side, and a transparent electrode disposed within said insulating film sandwiched between said reflecting plate and said photodiode in opposition to said photodiode and transparent to the incident light, wherein said transparent electrode is electrically biased and electrically separated from said photodiode.

Dwg.2/4

41/3,AB/4 (Item 1 from file: 347)
DIALOG(R)File 347:JAPIO

00224591
PRODUCTION OF **IMAGE PICKUP** UNIT USING CHARGE TRANSFER ELEMENT

PUB. NO.: 53-026591 [JP 53026591 A]
PUBLISHED: March 11, 1978 (19780311)
INVENTOR(s): HARADA NOZOMI
APPLICANT(s): TOSHIBA CORP [000307] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 51-100928 [JP 76100928]
FILED: August 24, 1976 (19760824)
JOURNAL: Section: E, Section No. 32, Vol. 02, No. 62, Pg. 1850, May 11, 1978 (19780511)

ABSTRACT

PURPOSE: A porous **semiconductor** layer of a prescribed thickness is formed within the prescribed region of the reverse face of a substrate by anode formation, and is eliminated from the substrate by etching after impurity is doped at a high density in this layer. As a result, the **photosensitive area** of the substrate becomes thin, so that an **image pickup** unit of the **back illumination** type where dark current and white damage occurrence is reduced can be obtianed.

10/08/2002 09/974,817

44/3,AB/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

4603771 INSPEC Abstract Number: B9404-7230G-007
Title: Development of LPE-grown HgCdTe 64*64 FPA with a cutoff wavelength of 10.6 mu m
Author(s): Kanno, T.; Saga, M.; Kajihara, N.; Awamoto, K.; Sudo, G.; Ito, Y.; Ishizaki, H.
Author Affiliation: Japan Defense Agency, Tech. R&D Inst., Tokyo, Japan
Journal: Proceedings of the SPIE - The International Society for Optical Engineering vol.2020 p.49-56
Publication Date: 1993 Country of Publication: USA
CODEN: PSISDG ISSN: 0277-786X
U.S. Copyright Clearance Center Code: 0 8194 1269 4/93/$6.00
Conference Title: Infrared Technology XIX
Conference Sponsor: SPIE
Conference Date: 12-14 July 1993 Conference Location: San Diego, CA, USA
Language: English
Abstract: The authors have developed a hybrid HgCdTe focal plane array (FPA) for wavelengths from 8 to 11 mu m. They describe how they fabricated the **back illuminated** 64*64-element **photodiode** array on a liquid phase epitaxial (LPE) HgCdTe wafer, and a Si **CCD** multiplexer with line address readout. Carrier concentration was optimized in the p-type HgCdTe layer to maximize charge injection efficiency to the Si **CCD** readout circuit to more than 99.3%. Excellent uniformity of characteristics was achieved by using LPE HgCdTe grown with a tipping method, and passivating the **photodiode** array with an anodic sulfide of HgCdTe. Line address readout was used to give a large charge storage capacity of 4*10/sup 7/ electrons. A noise equivalent temperature difference (NETD) of 0.08 K with F/2.5 optics, was estimated. Some preliminary experiments were attempted to reduce the crosstalk from photogenerated carriers which spread laterally into the epitaxial layer. The modulation transfer function (MTF) at Nyquist spatial frequency was improved from the conventional 35% to 60% by using a crosswise drain structure around each photosensitive n/sup +/ on p **diode**.
Subfile: B

44/3,AB/2 (Item 1 from file: 94)
DIALOG(R)File 94:JICST-EPlus

05167224 JICST ACCESSION NUMBER: 02A0396477 FILE SEGMENT: JICST-E
Analysis of a **CCD** register driven through the barrier for full-frame scheme **image sensor**. **CCD** register driven through the barrier.
TANAKA TOSHIYUKI (1); KIMURA TAKAYUKI (1); ONO ASUKA (1); SHIRAKI HIROMITSU (1)
(1) Ibaraki Univ., Faculty of Engineering, JPN
Eizo Joho Media Gakkai Gijutsu Hokoku, 2002, VOL.26,NO.26(IPU2002 13-23/CE2002 1-11), PAGE.53-58, FIG.11, TBL.2, REF.4
JOURNAL NUMBER: S0209ABW ISSN NO: 1342-6893
UNIVERSAL DECIMAL CLASSIFICATION: 621.397.61
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Original paper
MEDIA TYPE: Printed Publication
ABSTRACT: In this paper, a new **CCD** register is proposed to improve some disadvantages of the Full-Flame scheme **CCD image sensors**. The cell of the register is inverted version of the conventional **photo-diode** with overflow drain. Then, the register is suitable for **back illumination**. The leakage current between electrodes and electrode to channel could be reduced to a negligible level by adjusting barrier height. Also, the dark current generated at Si-SiO2 the interface has proved to flow into electrodes to minimize dark current. The transfer inefficiency for 7*104 signal electrons, that is decided by anti-blooming function of the cell, was as low as 10-11 within 8ns transfer period for pushing pulse with 4ns fall time. The new **CCD** register driven by four phase drive pulses could handle several times larger amount of charge than the two phase **CCD** using hole pinning mode. (author abst.)

44/3,AB/3 (Item 2 from file: 94)
DIALOG(R)File 94:JICST-EPlus

02048797 JICST ACCESSION NUMBER: 94A0399959 FILE SEGMENT: JICST-E
A Miniature PtSi Schottky-Barrier IR-**CCD Image Sensor** Having New Wiring Structure.
TOOYAMA SHIGERU (1); MASUBUCHI KOICHI (1); TERANISHI NOBUKAZU (1); TAKANO EIJI (2); YAMAGATA SHIGEKI (2); MURAMATSU TOSHIO (2); SEKI TAKAHIKO (3); ONO TAKESHI (3); GOTO HIDEKI (4)
(1) NEC Corp., Microelectron. Res. Labs.; (2) NEC Corp.; (3) Nippon Denki Kokuuchu Shisutemu; (4)Nihondenkishinkugarasu
Terebijon Gakkai Gijutsu Hokoku, 1994, VOL.18,NO.17(IPU94 14-21), PAGE.13-18, FIG.9, TBL.1, REF.8
JOURNAL NUMBER: S0209AAF ISSN NO: 0386-4227
UNIVERSAL DECIMAL CLASSIFICATION: 621.397.61
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Original paper
MEDIA TYPE: Printed Publication
ABSTRACT: A **back** surface **illuminated** 130*130 pixel PtSi Schottky-barrier (SB) IR-**CCD image sensor** has been developed by using a new wiring structure, referred to as CLOSE Wiring. CLOSE Wiring, designed to effectively utilize the space over the SB **photodiodes**, brings about flexibility in clock line designing, high fill factor, and large charge handling capability in a vertical **CCD** (VCCD). This **image sensor** uses a progressive scanned interline-scheme, and has a 64.4 percent fill factor and 3.3 .MU.m wide VCCD in a 30 .MU.m pixel. The charge handling capability for VCCD achieves 9.8*105 electrons. The noise equivalent temperature difference obtained was 0.099 K for operation at 120 frames/sec with f/1.3 optics. (author abst.)

44/3,AB/4 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

014177857
WPI Acc No: 2001-662085/200176
Related WPI Acc No: 2001-111872
XRPX Acc No: N01-493192
Image sensor for video **camera**, has **semiconductor** device whose thickness is defined such that light-sensitive pixel is exposed through secondary surface of **semiconductor** substrate
Patent Assignee: TOWER SEMICONDUCTOR LTD (TOWE-N)
Inventor: KOLTIN E; MALINOVICH Y
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 6169319	B1	20010102	US 99372863	A	19990812	200176	B
			US 99441766	A	19991117		

Priority Applications (No Type Date): US 99372863 A 19990812; US 99441766 A 19991117
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 6169319	B1		15	H01L-027/146	Div ex application US 99372863

Abstract (Basic): US 6169319 B1
Abstract (Basic):

NOVELTY - A transparent substrate (440) is secured to secondary surface (320) of substrate such that **semiconductor** substrate is sandwiched between transparent and protective substrate. The **semiconductor** device thickness is defined such that light sensitive pixel region formed on primary surface of **semiconductor** substrate (310) is exposed through secondary surface.

DETAILED DESCRIPTION - The primary surface (310) of substrate has several light sensitive pixel regions and **photodiode** (510), diffusion region extends to **semiconductor** substrate from primary surface. A protective substrate is secured such that metal line formed adjacent to primary surface is located between both substrates.

USE - For video **cameras** e.g. charge coupled device, CMOS **image sensor**.

ADVANTAGE - Thinning process is performed inexpensively, as the method utilizes a protective substrate to support the **semiconductor** substrate.

DESCRIPTION OF DRAWING(S) - The figure shows the cross-sectional view of **back-illuminated** CMOS APS cell.

Primary surface (310)
Secondary surface (320)
Transparent substrate (440)
Photodiode (510)
pp; 15 DwgNo 5/6

46/3,AB/1 (Item 1 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

05559053
E.I. No: EIP00055169050
Title: **Back-illuminated**, fully-depleted **CCD image sensors** for use in **optical** and near-IR astronomy
Author: Groom, D.E.; Holland, S.E.; Levi, M.E.; Palaio, N.P.; Perlmutter, S.; Stover, R.J.; Wei, M.
Corporate Source: Univ of California, Berkeley, CA, USA
Conference Title: The 2nd International Conference on New Developments in Photodetection
Conference Location: Beaune, France Conference Date: 19990621-19990625
E.I. Conference No.: 56717
Source: Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment v 442 n 1 2000. p 216-222
Publication Year: 2000
CODEN: NIMAER ISSN: 0168-9002
Language: English
Abstract: Charge-coupled devices (CCDs) of novel design have been fabricated at Lawrence Berkeley National Laboratory (LBNL), and the first large-format science-grade chips for astronomical imaging are now being characterized at Lick Observatory. They are made on 300- mu m thick n-type high-resistivity (approx. 10000 Omega cm) silicon wafers, using a technology developed at LBNL to fabricate low-leakage silicon microstrip detectors for high-energy physics. A bias voltage applied via a transparent contact on the back side fully depletes the substrates, making the entire volume photosensitive and ensuring that charge reaches the potential wells with minimal lateral diffusion. The development of a thin, transparent back-side contact compatible with fully depleted operation permits blue response comparable to that obtained with thinned CCDs. Since the entire region is active, high quantum efficiency is maintained to nearly lambda equals 1000 nm, above which the silicon band gap effectively truncates photoproduction. Early characterization results indicate a charge transfer efficiency greater than 0.999995, readout noise 4 e's at minus 132 degree C, full well capacity greater than 300000 e's, and quantum efficiency greater than 85% at lambda equals 900 nm. (Author abstract) 29 Refs.

46/3,AB/2 (Item 2 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

03350526
E.I. Monthly No: EIM9112-062210
Title: Charge-Coupled Devices and Solid State **Optical Sensors** II.
Author: Blouke, Morley M. (Ed.)
Corporate Source: Tektronix Inc, Beaverton, OR, USA
Conference Title: Charge-Coupled Devices and Solid State Optical Sensors II
Conference Location: San Jose, CA, USA Conference Date: 19910225
E.I. Conference No.: 15290
Source: Proceedings of SPIE - The International Society for Optical Engineering v 1447 1991. Publ by Int Soc for Optical Engineering, Bellingham, WA, USA. 318p
Publication Year: 1991
CODEN: PSISDG ISSN: 0277-786X ISBN: 0-8194-0546-9
Language: English
Abstract: This conference contains 29 articles on developments in the field of charge coupled devices and solid state **optical sensors** . Topics discussed include: charge-coupled and charge-injection devices in analytical spectroscopy; thinned **back-illuminated CCD** coupled to a confocal microscope for low-light-level fluorescence imaging; virtual-phase **CCD** imaging system for astronomy; effects of proton damage on charge coupled devices; digital radiology with solid state linear x-ray detectors; radiation concerns for the Solar-A soft x-ray telescope; **back-illuminated** quadrant readout imager; and notch and large-area **CCD** imagers

49/3,AB/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

6485527 INSPEC Abstract Number: A2000-05-9555-034, B2000-03-7420-051
Title: Synchrotron calibration and response modelling of **back-illuminated** XMM-RGS CCDs
Author(s): Bootsma, T.M.V.; van Zwet, E.J.; Brinkman, A.C.; den Herder, J.W.; de Jong, L.; de Korte, P.; Olsthoorn, S.M.
Author Affiliation: Space Res. Organ. of the Netherlands, Utrecht, Netherlands
Journal: Nuclear Instruments & Methods in Physics Research, Section A (Accelerators, Spectrometers, Detectors and Associated Equipment)
Conference Title: Nucl. Instrum. Methods Phys. Res. A, Accel. Spectrom. Detect. Assoc. Equip. (Netherlands) vol.439, no.2-3 p.575-81
Publisher: Elsevier,
Publication Date: 11 Jan. 2000 Country of Publication: Netherlands
CODEN: NIMAER ISSN: 0168-9002
SICI: 0168-9002(20000111)439:2/3L.575:SCRM;1-B
Material Identity Number: G700-2000-002
U.S. Copyright Clearance Center Code: 0168-9002/2000/$20.00
Conference Title: 8th European Symposium on Semiconductor Detectors
Conference Date: 14-17 June 1998 Conference Location: Schloss Elmau, Germany
Language: English
Abstract: **Back-illuminated** CCDs with high quantum efficiency for 0.35-2.5 keV X-rays in combination with low efficiency at optical **wavelengths** have been developed for XMM-RGS. As part of the calibration programme, a systematic study of the **CCD** response in this energy range has been performed at the Synchrotron Radiation Source in Daresbury, UK. These measurements show the good quantum efficiency of the CCDs. The results are consistently described by a Monte Carlo model.
Subfile: A B

49/3,AB/2 (Item 2 from file: 2)
DIALOG(R)File 2:INSPEC

5782490 INSPEC Abstract Number: A9803-9575-003, B9802-7230G-012
Title: Characterization of a fully depleted **CCD** on high resistivity silicon
Author(s): Stover, R.J.; Wei, M.; Lee, Y.; Gilmore, D.K.; Holland, S.E.; Groom, D.E.; Moses, W.W.; Perlmutter, S.; Goldhaber, G.; Pennypacker, C.; Wang, N.W.; Palaio, N.; Wang, N.W.
Author Affiliation: Lick Obs., California Univ., Santa Cruz, CA, USA
Journal: Proceedings of the SPIE - The International Society for Optical Engineering Conference Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA) vol.3019 p.183-8
Publisher: SPIE-Int. Soc. Opt. Eng,
Publication Date: 1997 Country of Publication: USA
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(1997)3019L.183:CFDH;1-#
Material Identity Number: C574-97117
U.S. Copyright Clearance Center Code: 0 8194 2430 7/97/$10.00
Conference Title: Solid State Sensor Arrays: Development and Applications
Conference Sponsor: SPIE; Soc. Imaging Sci. & Technol
Conference Date: 10-11 Feb. 1997 Conference Location: San Jose, CA, USA
Language: English
Abstract: Most scientific **CCD** imagers are fabricated on 30-50 Omega -cm Si. To enhance the blue response of scientific CCDs, they are often thinned and **illuminated** from the **back** side. While blue response is enhanced by this process, it is expensive and introduces additional problems for the red end of the spectrum. A typical thinned **CCD** is 15-25 mu m thick, and at **wavelengths** >800 nm, the absorption depth becomes comparable to the device thickness, leading to reflected light interference fringes. As these fringes are of high order, the fringe spatial pattern is extremely sensitive to small illumination changes. Calibration and removal of fringe effects is a primary limitation on the performance of astronomical imaging at **wavelengths** >or=800 nm. In this paper, we present results from characterization of a **CCD** which promises to address many problems of thinned CCDs. The **CCD** reported here was fabricated on a 10-12 k Omega -cm n-type Si substrate. The **CCD** is a 200*200 15 mu m square pixel array, and due to the very high resistivity, the entire 300 mu m substrate is depleted. Full depletion works due to gettering technology to keep leakage current down. Both front-side and **back**-side **illuminated** devices have been tested. We measured quantum efficiency, read noise, full-well, charge transfer efficiency, and leakage current. We also observed the effects of clocking waveform shapes on spurious charge generation. The new CCDs do have limitations such as charge spreading and cosmic-ray effects, which have been characterized and are presented. Examples of astronomical observations using with the backside **CCD** on the 1 m reflector at Lick Observatory are presented.
Subfile: A B

49/3,AB/3 (Item 3 from file: 2)
DIALOG(R)File 2:INSPEC

04283127 INSPEC Abstract Number: B9301-7230G-027
Title: Bump bonded **back illuminated** CCDs
Author(s): Lesser, M.P.; Bauer, A.; Ulrickson, L.; Ouellette, D.
Author Affiliation: Arizona Univ., Tucson, AZ, USA
Journal: Proceedings of the SPIE - The International Society for Optical Engineering vol.1656 p.508-16
Publication Date: 1992 Country of Publication: USA
CODEN: PSISDG ISSN: 0277-786X
U.S. Copyright Clearance Center Code: 0 8194 0810 7/92/$4.00
Conference Title: High-Resolution Sensors and Hybrid Systems
Conference Sponsor: SPIE; Soc. Imaging Sci. Technol
Conference Date: 10-14 Feb. 1992 Conference Location: San Jose, CA, USA
Language: English
Abstract: The authors have developed a thinning and packaging process which allows the conversion of front-illuminated charge-coupled devices (CCDs) into **back illuminated** sensors. This process does not depend on any special processing by the manufacturer and can therefore be used with any type of **CCD**. The process consists of several major steps which include: making a silicon substrate with conductive traces and indium bumps which mate to the **CCD** wire bonding pads; placing indium bumps on the **CCD** wire bonding pads; bump bonding the substrate and **CCD** together; thinning; packaging; oxidizing the backside surface; applying antireflection coatings; and backside charging. Using this process with Loral 1200*800 and 3072*1024 CCDs, the authors have produced devices with quantum efficiency in excess of 80% in the near-UV and visible **wavelength** regions. The surface flatness of these devices has been measured interferometrically to deviate from a plane by less than 1 mu m rms for the 1200*800 pixel sensors.
Subfile: B

49/3,AB/4 (Item 1 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

02926938
E.I. Monthly No: EI9007085282
Title: PtSi Schottky-barrier focal plane arrays for multispectral imaging in ultraviolet, visible, and infrared spectral bands.
Author: Tsaur, Bor-Yeu; Chen, C. K.; Mattia, John-Paul
Corporate Source: MIT Lincoln Lab, Lexington, MA, USA
Source: IEEE Electron Device Letters v 11 n 4 Apr 1990 p 162-164
Publication Year: 1990
CODEN: EDLEDZ ISSN: 0193-8576
Language: English
Abstract: PtSi Schottky-barrier detectors, which are conventionally used in the **back-illumination** mode for thermal imaging in the 3-5- mu m infrared (IR) spectral band, are shown to exhibit excellent photoresponse in the near-ultraviolet and visible regions when operated in the front-illumination mode. For devices without antireflection coatings, external quantum efficiency in excess of 60% has been obtained for **wavelengths** between 400 and 800 nm. The efficiency decreases below 400 nm but is still about 35% at 290 nm. High-quality imaging has been demonstrated in both the visible and 3-5- mu m spectral bands for front-illuminated 160- multiplied by 244-element PtSi focal plane arrays integrated with monolithic **CCD** readout circuitry. 10 Refs.

49/3,AB/5 (Item 2 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

00862294
E.I. Monthly No: EI7911090441
E.I. Yearly No: EI79085687
Title: SOFT X-RAY IMAGING EXPERIMENTS WITH CHARGE COUPLED DEVICES (CCDs) AND SOME ASTRONOMICAL APPLICATIONS.
Author: Burstein, P.; Krieger, A. S.; Vanderhill, M. J.; Wattson, R. B.
Corporate Source: Am Sci & Eng Inc, Cambridge, Mass
Source: Proceedings of the Society of Photo-Optical Instrumentation Engineers v 143, Appl of Electron Imaging Syst, Meet, Washington, DC, Mar 30-31 1978. Publ by SPIE, Bellingham, Wash, 1978 p 114-123
Publication Year: 1978
CODEN: SPIECJ ISSN: 0361-0748
Language: ENGLISH
Abstract: The suitability of a **CCD** for use as a soft X-ray (E < 2 kev) **image detector** for astronomical and laboratory applications has been evaluated. The sensitivity of a currently available **CCD** to soft X-ray radiation has been measured. It was found to be comparable to that of other presently available X-ray **image detectors**. **Back-illuminated** CCDs which soon will be available offer significantly greater sensitivity, especially at longer X-ray **wavelengths**. Theoretical X-ray spectra of hot optically thin plasma sources such as those found in the solar corona or supernova remnants have been convolved, and the response characteristics of the various CCDs and minimum detectable fluxes have been determined as a function of plasma temperature. When operated at very low temperatures with optimal noise adjustment, the **CCD** may be used as an array of single X-ray photon detectors of excellent spectral and reasonable spatial resolution.

70/3,AB/5 (Item 5 from file: 347)
DIALOG(R)File 347:JAPIO

00444924
SOLID STATE PICKUP ELEMENT

PUB. NO.: 54-096924 [JP 54096924 A]
PUBLISHED: July 31, 1979 (19790731)
INVENTOR(s): MORISHITA MASANOBU
APPLICANT(s): NEC CORP [000423] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 53-003988 [JP 783988]
FILED: January 17, 1978 (19780117)
JOURNAL: Section: E, Section No. 142, Vol. 03, No. 119, Pg. 66, October 06, 1979 (19791006)

ABSTRACT

PURPOSE: To increase the yield for the solid state **photoelectric converter** without increasing the manufacturing processes by isolating the color stripe filter from the solid state **photoelectric converter** by means of the **optical** fiber bundle.

CONSTITUTION: Stripe filter 1 is formed by arraying pass-type red filter 6, green filter 7 and blue filter 8 alternately. Gass 2 and **optical** fiber bundle 3 are attached in a body to filter 1, and solid state **photoelectric conversion** element 5 is distributed with space 4 secured. Beam 14 given from spot **light source** 11 which is distant by t(sub 1) from **optical** fiber bundle 12 is put into bundle 12. This incident beam is reflected many times in bundle 12 at the boundary between the center part and the covered part to be emitted from the **opposite side** . The angle of the emitted beam is set large enough to the length and depth of bundle 12 to secure the identity between the incident angle and the emission angle. The image of **light source** 11 is formed at point 13 with distance t(sub 1)=t(sub 2), and the **optical** image at the position of filter 1 is formed on the surface of conversion element 5.

64/3,AB/3 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX

008978638
WPI Acc No: 1992-105907/199214
XRPX Acc No: N92-079360

Ophthalmoscopic **camera** distinguishing abnormalities in IR filters - processes signals from **photodetectors** to which light is reflected out of excitation and response paths

Patent Assignee: TOPCON CORP (TOKI)
Inventor: SANO E
Number of Countries: 002 Number of Patents: 003
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
DE 4132181	A	19920326	DE 4132181	A	19910924	199214	B
US 5237350	A	19930817	US 91764281	A	19910923	199334	
DE 4132181	C2	19940120	DE 4132181	A	19910924	199403	

Priority Applications (No Type Date): JP 90254555 A 19900925
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
DE 4132181	A		7		
US 5237350	A		6	A61B-003/10	
DE 4132181	C2		7	A61B-003/14	

Abstract (Basic): DE 4132181 A

Observations are made with a halogen lamp (3), and photographs taken with a Xe lamp (5) shining through a stop (7) and relay lenses (8, 10) on to the cornea (19) via a slotted mirror (12). A rapidly retractable mirror (15) is swung in front of the photographic film (16) for observations (25).

Abnormalities in the excitation filter (26) are detected by reflection (28) to a **photodetector** (29) and decision circuit (30). A similar arrangement (28'-30') serves the blocking filter (27) between the slotted mirror (12) and the focussing system (13) of the **camera**.

ADVANTAGE - Sharp photographic images are obtainable even with infrared light, and injury to eye is avoided.

Dwg.1/4

Abstract (Equivalent): DE 4132181 C

The **camera** photographs the eye (18) on film (16) exposed to fluorescence which is excited by a Xe lamp (5) irradiating the pupil (19) via an excitation filter (26) and **optical** system (6-12). A halogen lamp (3) is used for monitoring (22).

A dichroic mirror (28) introduced between the filter and annular screen (7) reflects **wavelengths** outside the 700-800 nm band to a **photodetector** (29) and processor (30). The same arrangement (28'-30') can be used to check the blocking filter (27) introduced into the photographic system (2).

USE/ADVANTAGE - In fundus ophthalmography with intravenous injection of fluorescein, good photographs can be taken with infrared irradiation avoiding damage to the eye from other **wavelengths**

passed by a defective filter.
Dwg.1/4

Abstract (Equivalent): US 5237350 A

The abnormality detector detects an abnormality if there is a flaw or deterioration of a filter used to take a photograph when a fluorescent agent is caused to fluoresce by infra-red light. The detector preferably detects abnormalities of an exciter filter which transmits infra-red light in a specific **wavelength range** which causes fluorescence of a fluorescent agent in an illuminating light source. More specifically, this detector comprises a reflecting mirror, disposed on the **opposite side** of the exciter filter to the illuminating light source, which reflects a part of the illuminating light (here, the term illuminating light will be understood to mean infra-red light in the specific **wavelength range** and illuminating light in other **wavelength ranges**) that has passed through the exciter filter.

A **photodetector** is located in the direction of reflection of the reflecting mirror which detects illuminating light reflected by the mirror. A circuit decides whether or not there is an abnormality in the exciter filter according to the output variation of the **photodetector**.

Dwg.1/4

49/3,AB/6 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

010294072
WPI Acc No: 1995-195332/199526
XRPX Acc No: N95-153349
Semiconductor inspection system for internal anomalous occurrence analysis - has **image pick-up** of **back** surface **illuminated** by infrared ray passing through filter with image reversing unit and superimposing of anomalous image for output
Patent Assignee: HAMAMATSU PHOTONICS KK (HAMM)
Inventor: HIRUMA Y; INUZUKA E; NAGATA W; OGURI S; SUZUKI K
Number of Countries: 006 Number of Patents: 003
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 653626	A1	19950517	EP 94308385	A	19941114	199526	B
JP 7190946	A	19950728	JP 94272519	A	19941107	199539	
US 6002792	A	19991214	US 94341906	A	19941115	200005	
			US 96607873	A	19960229		

Priority Applications (No Type Date): JP 94272519 A 19941107; JP 93286820 A 19931116
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 653626	A1	E	14	G01N-021/88	
Designated States (Regional): DE FR GB IT					
US 6002792	A			G06K-009/00	Div ex application US 94341906
JP 7190946	A		10	G01N-021/88	

Abstract (Basic): EP 653626 A

The inspection system includes a **CCD camera** (2) and an **image pickup** arrangement (4) for taking an image of a back surface of a **semiconductor**. An infra-red ray epi-illumination unit (5) is provided to make light in a wide **wavelength** region including an infrared region emitted from a light source pass through an optical filter (5c) made of the same material as the **semiconductor**. An image reversing unit produces first reversed image data.

A first image output is provided when the **back** surface is well **illuminated** by the ray and a second reversed **image** of a weak **pickup** is obtained under an anomalous portion of the **semiconductor** body. An adder superimposes the two data images to output the result. A display control is provided to display a restored image.

USE/ADVANTAGE - System can analyse anomalous portion at high speed being superior in operation and giving good measurement accuracy. Clear reflected optical image has less noise component and offset component can be taken as interrupting light is reflected on **semiconductor** device surface.

Dwg.2/6

55/3,AB/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

013627664
WPI Acc No: 2001-111872/200112
Related WPI Acc No: 2001-662085
XRPX Acc No: N01-082176

Producing **back-illuminated** CMOS **image sensors** for video **cameras** comprises adhesive on protective substrate with back side surface exposed to material erosion

Patent Assignee: TOWER SEMICONDUCTOR LTD (TOWE-N)
Inventor: KOLTIN E; MALINOVICH Y

Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 6168965	B1	20010102	US 99372863	A	19990812	200112	B

Priority Applications (No Type Date): US 99372863 A 19990812
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 6168965	B1		16	H01L-021/00	

Abstract (Basic): US 6168965 B1
Abstract (Basic):

NOVELTY - The method for producing a **back-illuminated** CMOS **image sensor** in which the **semiconductor** wafer is mounted onto a protective substrate undergoes a material erosion process. This is in the form of an optical backside stripping technique such as chemical/mechanical polishing of the **semiconductor** substrate until it has a thickness that allows exposure of the pixels (500) through the back-side of the **semiconductor** substrate (505).

DETAILED DESCRIPTION - Preferably, The **semiconductor** substrate is then secured to the protective substrate using an adhesive. The processed front side surface of the **image sensor** circuit faces the protective substrate. The exposed back side surface of the **semiconductor** substrate is subjected to grinding and etching processes. A backside polishing technique is carried out to thin the **semiconductor** substrate until it is transparent to visible light, exposing the light-sensitive back-surface to light. Grinding reduces the thickness to 120-140 microns and the etching reduces the thickness to 10 -15 microns.

USE - For manufacture of active pixel sensors (APS) and charge coupled device (**CCD**) **image sensors** used in video **cameras**.

ADVANTAGE - The CMOS **image sensors** can be fabricated using well-established processing techniques. The method uses a protective substrate to support the **semiconductor** substrate therefore the thinning process is cheap to perform. The production method incorporates package forming using standard CMOS process steps, thereby reducing the complexity. cycle time, handling and shipping of **back illuminated** CMOS APS devices.

DESCRIPTION OF DRAWING(S) - The figure shows a simplified cross

section of a portion of a **back-illuminated** CMOS **image sensor**.
Light sensitive pixel (500)
Semiconductor substrate (505)
Diffusion light sensitive region (515)
pp; 16 DwgNo 5/24

55/3,AB/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX

009711391
WPI Acc No: 1993-404944/199350
XRAM Acc No: C93-179930
XRPX Acc No: N93-313462
Mfr. of thinned **back-illuminated** solid-state **image sensors** - using two silicon wafers thermally bonded via a silicon dioxide layer which acts as a passivation layer for the finished device
Patent Assignee: HUGHES AIRCRAFT CO (HUGA)
Inventor: AMERICA W; GARCIA E; POOLE R
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 5270221	A	19931214	US 92972030	A	19921105	199350	B

Priority Applications (No Type Date): US 92972030 A 19921105
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5270221	A		10	H01L-031/18	

Abstract (Basic): US 5270221 A
Thinned, **back-illuminated**, solid state **image sensors** are mfd. by (i) positively doping the bottom surface (22) of a top **semiconductor** wafer (24) and bonding the surface to a top surface (26) of a bottom **semiconductor** wafer (28) via an SiO2 passivating layer (34); (ii) thinning top wafer (24); (iii) forming SiO2 insulation (36) and polySi gate (38) on the thinned wafer; (iv) forming individual dies (40) and bonding to a substrate (42) along each pixel face; (v) etching away bottom wafer (28) to expose passivation layer (34) which acts to protect thinned top wafer (24); and (vi) etching the dies (40) to expose bonding pads within the gate structure (38).
USE/ADVANTAGE - Esp. as **CCD image sensor**. Method is simple and the passivation layer protects the bottom surface of the thinned device from surface charging etc. so that high quantum efficiency and good spectral response are achieved.
4b,4c,4d/4

55/3,AB/3 (Item 3 from file: 347)
DIALOG(R)File 347:JAPIO

04176233
SOLID STATE **IMAGE PICKUP** DEVICE

PUB. NO.: 05-167933 [JP 5167933 A]
PUBLISHED: July 02, 1993 (19930702)
INVENTOR(s): TOFUKU ISAO
AWAMOTO KENJI
WAKAYAMA HIROYUKI
APPLICANT(s): FUJITSU LTD [000522] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 03-329131 [JP 91329131]
FILED: December 12, 1991 (19911212)
JOURNAL: Section: E, Section No. 1449, Vol. 17, No. 575, Pg. 124, October 20, 1993 (19931020)

ABSTRACT

PURPOSE: To attain low noise and low power consumption by reducing kTC noise in the case of a MOS type solid state **image pickup** device for picking up an image of an object with low contrast in a **back** ground with high **brightness**.

CONSTITUTION: In a storage part 35, input gates(IGs) 36 are made always opened state and electrostatic charge stored in storage gates(SGs) 37 is transferred from output gates(OGs) 39 to floating diffusion layers 39b through respective transfer gates(TGs) 38 and then converted into voltages. The signal voltages are amplified by amplifier driver MOS TRs 40 and multiplexed by driving switching MOS TRS 43

57/3,AB/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

7298628 INSPEC Abstract Number: A2002-15-9555-037, B2002-07-7450-053
Title: Evaluation and selection of **back-illuminated** CCDs for Solar-B X-Ray Telescope
Author(s): Kano, R.; Kumagai, K.; Tsuneta, S.; Hara, H.; Shinoda, K.; Sakao, T.; Nagata, S.; Kobayashi, K.
Author Affiliation: Inst. of Space & Astronaut. Sci., Japan
Journal: Report of the National Astronomical Observatory of Japan vol.5, no.1 p.19-28
Publisher: Natl. Astron. Obs. Japan,
Publication Date: 2000 Country of Publication: Japan
CODEN: KTENE2 ISSN: 0915-6321
SICI: 0915-6321(2000)5:1L.19:ESBI;1-D
Material Identity Number: N818-2001-002
Language: Japanese
Abstract: We investigated the degradation of **back-illuminated** CCDs by X-ray irradiation to select the **CCD** vendor for the X-Ray Telescope (XRT) aboard the Solar-B satellite. We tested two **back-illuminated CCD** devices developed by two companies: CCD30-11 of Marconi Applied Technologies (MAT) and SI-502A of Scientific Imaging Technologies, Inc. (SITe), by utilizing beam lines located at the UVSOR Facility in Okazaki National Research Institute and the Photon Factory in High Energy Accelerator Research Organization. Both devices have (1) small dark current of 1-10 e s/sup -1/ pixel at -50 degree, and (2) high quantum efficiency of 40-80% in the range of 10-300 AA. (3) The dark current increased and the quantum efficiency decreased, due to the X-ray irradiation. (4) The degradation of SITe SI-502A was more significant than that of MAT CCD30-11. Therefore, we concluded that the CCD30-11 ("standard process" in MAT) is the most suitable device for XRT.
Subfile: A B

57/3,AB/2 (Item 2 from file: 2)
DIALOG(R)File 2:INSPEC

7239015 INSPEC Abstract Number: B2002-05-7230G-027
Title: High-fill-factor, burst-frame-rate charge-coupled device
Author(s): Reich, R.K.; O'Mara, D.M.; Young, D.J.; Loomis, A.H.; Rathman, D.D.; Craig, D.M.; Watson, S.A.; Ulibarri, M.D.; Kosicki, B.B.
Author Affiliation: Lincoln Lab., MIT, Lexington, MA, USA
Conference Title: International Electron Devices Meeting. Technical Digest (Cat. No.01CH37224) p.24.6.1-4
Publisher: IEEE, Piscataway, NJ, USA
Publication Date: 2001 Country of Publication: USA 951 pp.
ISBN: 0 7803 7050 3 Material Identity Number: XX-2002-00101
U.S. Copyright Clearance Center Code: 0-7803-7050-3/01/$10.00
Conference Title: International Electron Devices Meeting. Technical Digest
Conference Sponsor: Electron Devices Soc. IEEE
Conference Date: 2-5 Dec. 2001 Conference Location: Washington, DC, USA
Language: English
Abstract: A 512*512-element, multi-frame charge-coupled device (**CCD**) has been developed for collecting four sequential image frames at megahertz rates. To operate at fast frame rates with high sensitivity, the imager uses an electronic shutter technology developed for **back-illuminated** CCDs. The megahertz frame rates also required metal strapping of the polysilicon gate electrodes. Tested imagers have demonstrated multi-frame capture capability.
Subfile: B

57/3,AB/3 (Item 3 from file: 2)
DIALOG(R)File 2:INSPEC

6757113 INSPEC Abstract Number: A2000-24-0762-015, B2000-12-7230G-049
Title: Thinned charged coupled devices with flat focal planes for UV imaging
Author(s): Jones, T.J.; Deelman, P.W.; Elliott, S.T.; Grunthaner, P.J.; Wilson, R.; Nikzad, S.
Author Affiliation: Jet Propulsion Lab., California Inst. of Technol., Pasadena, CA, USA
Journal: Proceedings of the SPIE - The International Society for Optical Engineering Conference Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA) vol.3965 p.148-56
Publisher: SPIE-Int. Soc. Opt. Eng,
Publication Date: 2000 Country of Publication: USA
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(2000)3965L.148:TCCD;1-K
Material Identity Number: C574-2000-148
U.S. Copyright Clearance Center Code: 0277-786X/2000/$15.00
Conference Title: Sensors and Camera Systems for Scientific, Industrial, and Digital Photography Applications
Conference Sponsor: SPIE; Int. Soc. Opt. Eng
Conference Date: 24-26 Jan. 2000 Conference Location: San Jose, CA, USA
Language: English
Abstract: A versatile post-fabrication process to produce thinned, flat, **back-illuminated** charge-coupled devices (CCDs) has been developed. This technique is compatible with many ultraviolet enhancement treatments and has been demonstrated with the delta doping process. The significance of this demonstration is that thinned, robust, and flat CCDs are produced without the use of epoxies or waxes using temperatures and materials that are compatible with standard **CCD** fabrication and delta doping processes. In our approach, the **CCD** is attached by thermocompression bonding to a specially-designed silicon substrate using gold-gold diffusion bonding prior to thinning. CCDs with optically flat membranes (10-20 mu m) were produced with excellent yield. These flat CCDs have been successfully delta doped. We discuss the process of producing thinned flat CCDs, their delta doping, and our results to date.
Subfile: A B

57/3,AB/4 (Item 4 from file: 2)
DIALOG(R)File 2:INSPEC

6410811 INSPEC Abstract Number: A2000-01-4280Q-001, B2000-01-7230G-011
Title: Quantum efficiency of a **back-illuminated CCD** imager: an optical approach
Author(s): Groom, D.E.; Holland, S.E.; Levi, M.E.; Palaio, N.P.; Perlmutter, S.; Stover, R.J.; Wei, M.
Author Affiliation: Lawrence Berkeley Lab., CA, USA
Journal: Proceedings of the SPIE - The International Society for Optical Engineering Conference Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA) vol.3649 p.80-90
Publisher: SPIE-Int. Soc. Opt. Eng,
Publication Date: 1999 Country of Publication: USA
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(1999)3649L.80:QEBI;1-M
Material Identity Number: C574-1999-167
U.S. Copyright Clearance Center Code: 0277-786X/99/$10.00
Conference Title: Sensors, Cameras, and Systems for Scientific/Industrial Applications
Conference Sponsor: SPIE; Soc. Imaging Sci. & Technol
Conference Date: 25-26 Jan. 1999 Conference Location: San Jose, CA, USA
Language: English
Abstract: We have developed an optical approach for modeling the quantum efficiency (QE) of **back-illuminated CCD** optical imagers for astronomy. Beyond its simplicity, it has the advantage of providing a complete fringing description for a real system. Standard thin-film calculations are extended by (a) considering the **CCD** itself as a thin film, and (b) treating the refractive index as complex. The QE is approximated as the fraction of the light neither transmitted nor reflected, which basically says that all absorbed photons produce e-h pairs and each photoproduced e or h is collected. Near-surface effects relevant to blue response must still be treated by standard **semiconductor** modeling methods. A simple analytic expression describes the QE of a **CCD** without antireflective (AR) coatings. With AR coatings the system is more easily described by transfer matrix methods. A two-layer AR coating is tuned to give a reasonable description of standard thinned **CCD**'s, while the measured QE of prototype LBNL totally depleted thick CCDs is well described with no adjustable parameters. Application to the new LBNL CCDs indicates that these devices will have QE>70% at lambda =1000 nm and negligible fringing in optical system faster than ~f4.0.
Subfile: A B

57/3,AB/5 (Item 5 from file: 2)
DIALOG(R)File 2:INSPEC

5712241 INSPEC Abstract Number: A9722-9555-003, B9711-7230G-020
Title: Soft-X-ray **CCD** imagers for AXAF
Author(s): Burke, B.E.; Gregory, J.A.; Bautz, M.W.; Prigozhin, G.Y.; Kissel, S.E.; Kosicki, B.B.; Loomis, A.H.; Young, D.J.
Author Affiliation: Lincoln Lab., MIT, Lexington, MA, USA
Journal: IEEE Transactions on Electron Devices vol.44, no.10 p. 1633-42
Publisher: IEEE,
Publication Date: Oct. 1997 Country of Publication: USA
CODEN: IETDAI ISSN: 0018-9383
SICI: 0018-9383(199710)44:10L.1633:SIA;1-N
Material Identity Number: I037-97010
U.S. Copyright Clearance Center Code: 0018-9383/97/$10.00
Language: English
Abstract: We describe the key features and performance data of a 1024*1026-pixel frame-transfer imager for use as a soft-X-ray detector on the NASA X-ray observatory Advanced X-ray Astrophysics Facility (AXAF). The four-port device features a floating-diffusion output circuit with a responsivity of 20 mu V/e/sup -/ and noise of about 2 e/sup -/ at a 100-kHz data rate. Techniques for achieving the low sense-node capacitance of 5 fF are described. The **CCD** is fabricated on high-resistivity p-type silicon for deep depletion and includes narrow potential troughs for transfer inefficiencies of around 10/sup -7/. To achieve good sensitivity at energies below 1 keV, we have developed a **back-illumination** process that features low recombination losses at the back surface and has produced quantum efficiencies of about 0.7 at 277 eV (carbon K alpha).
Subfile: A B

57/3,AB/6 (Item 6 from file: 2)
DIALOG(R)File 2:INSPEC

5475286 INSPEC Abstract Number: B9702-7230G-082
Title: Sub-Poisson statistics observed in an electronically shuttered and **back-illuminated CCD** pixel
Author(s): Reich, R.K.
Author Affiliation: Lincoln Lab., MIT, Lexington, MA, USA
Journal: IEEE Transactions on Electron Devices vol.44, no.1 p.69-73
Publisher: IEEE,
Publication Date: Jan. 1997 Country of Publication: USA
CODEN: IETDAI ISSN: 0018-9383
SICI: 0018-9383(199701)44:1L.69:PSOE;1-W
Material Identity Number: I037-97001
U.S. Copyright Clearance Center Code: 0018-9383/97/$10.00
Language: English
Abstract: The variance versus average signal has been measured for a pixel in an electronically shuttered and **back-illuminated CCD** imaging array. The measurements demonstrate that, over a certain operating range, the electronic shutter modifies the input Poisson distributed photoelectrons during the collection process such that the charge signal accumulated in the **CCD** well has a sub-Poisson distribution (variance less than the mean). A simple one-dimensional model has been developed that explains the experimental results.
Subfile: B

57/3,AB/7 (Item 7 from file: 2)
DIALOG(R)File 2:INSPEC

5377720 INSPEC Abstract Number: A9621-2940-013, B9611-2560S-003
Title: **Back-illuminated** CCDs made by gas immersion laser doping
Author(s): van den Berg, M.L.; den Boggende, A.J.F.; Bootsma, T.M.V.; den Herder, J.W.; Jansen, F.A.; de Korte, P.A.J.; van Zwet, E.J.; Eaton, T.; Ginige, R.
Author Affiliation: Space Res. Organ. Netherlands, Utrecht, Netherlands
Journal: Nuclear Instruments & Methods in Physics Research, Section A (Accelerators, Spectrometers, Detectors and Associated Equipment)
Conference Title: Nucl. Instrum. Methods Phys. Res. A, Accel. Spectrom. Detect. Assoc. Equip. (Netherlands) vol.377, no.2-3 p.312-19
Publisher: Elsevier,
Publication Date: 1 Aug. 1996 Country of Publication: Netherlands
CODEN: NIMAER ISSN: 0168-9002
SICI: 0168-9002(19960801)377:2/3L.312:BICM;1-X
Material Identity Number: G700-96025
U.S. Copyright Clearance Center Code: 0168-9002/96/$15.00
Conference Title: New Developments in Radiation Detectors. Seventh European Symposium on Semiconductor Detectors
Conference Sponsor: Canberra-Packard GmbH; Eurisys Mesures; Hamamatsu Photonics; et al
Conference Date: 7-10 May 1996 Conference Location: Schloss Elmau, Germany
Language: English
Abstract: **Back-illuminated** CCDs with high quantum efficiency in the soft X-ray range have been developed by EEV in collaboration with the Space Research Organisation Netherlands. By using gas immersion laser doping (GILD) for producing the backside accumulation layer very shallow doping profiles can easily be achieved. Additionally the GILD process does not affect the silicon behind the p/sup +/ layer in contrast to the commonly used ion implantation process. This implies that only the electrons generated in, or reaching the very small accumulation layer will have a probability to recombine at the surface or in the accumulation layer itself. Therefore only a small fraction of the electron clouds produced by the absorbed soft X-rays will suffer charge loss, resulting in a high quantum efficiency. X-ray measurements of **back-illuminated** CCDs with doping profiles of 50 and 100 nm depth are presented and shown to be consistent with calculations based on minority carrier transport.
Subfile: A B

57/3,AB/8 (Item 8 from file: 2)
DIALOG(R)File 2:INSPEC

5298859 INSPEC Abstract Number: B9608-7230G-007
Title: **Back-illuminated** and electron-bombarded **CCD** low light level imaging system performance
Author(s): Williams, G.M., Jr.; Reinheimer, A.L.; Johnson, C.B.; Wheeler, K.D.; Wodecki, N.D.; Aebi, V.W.; Costello, K.A.
Author Affiliation: Sci. Imaging Technol. Inc., Beaverton, OR, USA
Journal: Proceedings of the SPIE - The International Society for Optical Engineering Conference Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA) vol.2551 p.208-23
Publisher: SPIE-Int. Soc. Opt. Eng,
Publication Date: 1995 Country of Publication: USA
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(1995)2551L.208:BIEB;1-T
Material Identity Number: C574-95223
U.S. Copyright Clearance Center Code: 0 8194 1910 9/95/$6.00
Conference Title: Photoelectronic Detectors, Cameras, and Systems
Conference Sponsor: SPIE
Conference Date: 13-14 July 1995 Conference Location: San Diego, CA, USA
Language: English
Abstract: A new class of video rate imagers based on **back-illuminated** and thinned CCDs is available that shows promise to replace conventional image intensifiers for most military, industrial, and scientific applications. Thinned, **back-illuminated** CCDs (BCCDs) and electron-bombarded CCDs (EBCCDs) offer low light level performance superior to conventional image intensifier coupled **CCD** (ICCD) approaches. These new, high performance devices promise to expand the fields of science, provide high contrast, high resolution, low light level surveillance imaging, and make nighttime pilotage safer for military aviators. This paper presents experimental data which illustrates how responsivity, gain, and modulation transfer function (MTF) determine the low light imaging capability, the "target of interest" signal to noise ratio (SNR) of each of these types of sensors. High SNR and MTF make **back-illuminated** CCDs the imager of choice under moderately low light levels and EBCCDs the imager of choice under extremely low light level conditions.
Subfile: B

57/3,AB/9 (Item 9 from file: 2)
DIALOG(R)File 2:INSPEC

5148324 INSPEC Abstract Number: A9603-2940-036, B9602-7420-041
Title: Energy deposition in X-ray CCDs and charged particle discrimination
Author(s): Owens, A.; McCarthy, K.J.
Author Affiliation: Dept. of Phys. & Astron., Leicester Univ., UK
Journal: Nuclear Instruments & Methods in Physics Research, Section A (Accelerators, Spectrometers, Detectors and Associated Equipment) vol.366, no.1 p.148-54
Publisher: Elsevier,
Publication Date: 21 Nov. 1995 Country of Publication: Netherlands
CODEN: NIMAER ISSN: 0168-9002
SICI: 0168-9002(19951121)366:1L.148:EDCC;1-S
Material Identity Number: G700-95029
U.S. Copyright Clearance Center Code: 0168-9002/95/$09.50
Language: English
Abstract: We report the results of investigation into ionization energy loss in X-ray CCDs and the ability of fast protons to masquerade as X-ray events by their energy and spatial signatures. The study was made to explore background contamination in X-ray detectors intended to operate in the mixed radiation environment of space. Three devices were considered in our study; a front illuminated 35 mu m deep depletion device developed for the Joint European X-ray Telescope, and two CCDs baselined for ESA`s XMM mission-a PN device of active depth 280 mu m and a **back-illuminated** MOS device of active depth 90 mu m. It was found that for the JET-X device, 4.9% of minimally ionizing protons deposit less than 10 keV in the active volume of the **CCD** . Whilst the frequency distribution of such events versus energy deposited increases up to a peak energy of ~9 keV, the number having a morphology consistent with X-ray events simultaneously decreases. Thus, when coupled with the requirement that events should extend no more than 2 pixels spatially, the fraction of masquerading events drops to 0.016%. The analysis was also carried out for the two XMM CCDs. For the PN device the fraction of events depositing less than 15 keV is miniscule whereas almost 4% of events were recorded for the MOS device. When coupled with an event size requirement of <or=2 pixels, the fraction of events falls to 1*10/sup -9/. A surprising result of the present work is that the ability of a **CCD** to discriminate against minimally ionizing particles is dependent on pixel size. For a JET-X like device this varies by a factor 10 for pixel sizes ranging from 13 to 35 mu m on a side. In fact, the optimum pixel size for both the JET-X and XMM MOS devices was found to be near 40 mu m.
Subfile: A B

57/3,AB/10 (Item 10 from file: 2)
DIALOG(R)File 2:INSPEC

5101954 INSPEC Abstract Number: B9512-7230G-049
Title: Electron-bombarded **back-illuminated CCD** sensors for low light level imaging applications
Author(s): Williams, G.M., Jr.; Reinheimer, A.L.; Aebi, V.W.; Costello, K.A.
Author Affiliation: Scientific Imaging Technol. Inc., Beaverton, OR, USA
Journal: Proceedings of the SPIE - The International Society for Optical Engineering Conference Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA) vol.2415 p.211-35
Publication Date: 1995 Country of Publication: USA
CODEN: PSISDG ISSN: 0277-786X
U.S. Copyright Clearance Center Code: 0 8194 1762 9/95/$6.00
Conference Title: Charged-Coupled Devices and Solid State Optical Sensors V
Conference Sponsor: SPIE; Soc. Imaging Sci. Technol
Conference Date: 6-7 Feb. 1995 Conference Location: San Jose, CA, USA
Language: English
Abstract: Low light level surveillance **cameras** with significantly higher performance and reduced form factor than the present state-of-the-art are critical for many commercial and military applications. Towards this end, a new approach to low light level **cameras** was successfully demonstrated. In a cooperative research and development effort between Scientific Imaging Technologies, Inc. of Beaverton, OR, and Intevac EO Sensors of Palo Alto, CA, **back-illuminated**, electron-bombarded **CCD** (EBCCD) sensors were designed and fabricated. Experiments demonstrated the EBCCD's sensitivity and contrast resolution superior to conventional intensified **CCD** (ICCD) approaches. Low light level signal-to-noise (STN) and contrast transfer function (CTF) data are presented. A model is derived which describes the performance of the EBCCD and the **back-illuminated CCD** relative to conventional approaches to night-time imaging. A design and simulated performance of a video rate 2/3 inch, **back-illuminated**, electron-bombarded **CCD** currently under development for low light imaging applications is also described.
Subfile: B

57/3,AB/11 (Item 11 from file: 2)
DIALOG(R)File 2:INSPEC

5101937 INSPEC Abstract Number: A9524-0762-006, B9512-7230G-035
Title: CCDs for spectroscopy
Author(s): Talmi, Y.; Blouke, M.M.; Dosluoglu, T.; Nelson, M.D.; Simpson, R.W.; West, J.
Author Affiliation: Princeton Instrum., NJ, USA
Journal: Proceedings of the SPIE - The International Society for Optical Engineering Conference Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA) vol.2415 p.58-66
Publication Date: 1995 Country of Publication: USA
CODEN: PSISDG ISSN: 0277-786X
U.S. Copyright Clearance Center Code: 0 8194 1762 9/95/$6.00
Conference Title: Charged-Coupled Devices and Solid State Optical Sensors V
Conference Sponsor: SPIE; Soc. Imaging Sci. Technol
Conference Date: 6-7 Feb. 1995 Conference Location: San Jose, CA, USA
Language: English
Abstract: CCDs have been used in spectroscopy for a number of years and for all the obvious reasons. Unfortunately, most scientific CCDs are square arrays and are not ideally formatted for spectroscopic applications. This paper discusses the design and fabrication of two **CCD** arrays specifically intended for use in spectroscopic applications. The devices have 1100*330 and 1752*532 pixel formats, and are fabricated using three phase overlapping polysilicon gate technology and they are available in both front-**illuminated** and **back-illuminated** versions. In addition, devices with enhanced UV sensitivity are being fabricated. Characterization data are presented. The architecture of these devices leads to some interesting applications which we discuss briefly.
Subfile: A B

57/3,AB/12 (Item 12 from file: 2)
DIALOG(R)File 2:INSPEC

4988086 INSPEC Abstract Number: B9508-7230G-009
Title: Performances of ion-implanted CCDs in the EUV spectral region
Author(s): Naletto, G.; Pace, E.; Tondello, G.; Boscolo, A.; Bonanno, G.
Author Affiliation: Dipartimento di Elettronica e Inf., Padova Univ., Italy
Journal: Proceedings of the SPIE - The International Society for Optical Engineering Conference Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA) vol.2278 p.98-107
Publication Date: 1994 Country of Publication: USA
CODEN: PSISDG ISSN: 0277-786X
U.S. Copyright Clearance Center Code: 0 8194 1602 9/94/$6.00
Conference Title: X-Ray and UV Detectors
Conference Sponsor: SPIE
Conference Date: 27-28 July 1994 Conference Location: San Diego, CA, USA
Language: English
Abstract: The performances of a pair of thinned **back-illuminated** ion-implanted and laser annealed CCDs have been evaluated in the EUV spectral region. Both the devices have been manufactured by EEV and one of them was also treated with the new technique of anodic etching to improve its quantum efficiency. The measurements performed consist mainly of the determination of the **CCD** quantum efficiency in the 300-2500 AA region. These tests have been performed by means of a new vacuum test facility and a new **CCD** controller realized in our laboratories which is interfaced with a PC; moreover, to have a low noise, both the CCDs have worked in a slow scan mode and have been cryogenically cooled. The results show that a **CCD** quantum efficiency decreasing during the tests is present, but demonstrate also that these devices can have a lot of capabilities as EUV detectors.
Subfile: B

57/3,AB/13 (Item 13 from file: 2)
DIALOG(R)File 2:INSPEC

4776175 INSPEC Abstract Number: A9421-4280Q-004, B9411-7230G-009
Title: Response analysis in the 300- to 2500-AA spectral range of ultraviolet-enhanced charge-coupled devices
Author(s): Naletto, G.; Tondello, G.; Bonanno, G.; Di Benedetto, R.; Scuderi, S.
Author Affiliation: Dept. of Electron. & Inf., Padova Univ., Italy
Journal: Optical Engineering vol.33, no.8 p.2544-52
Publication Date: Aug. 1994 Country of Publication: USA
CODEN: OPEGAR ISSN: 0091-3286
U.S. Copyright Clearance Center Code: 0091-3286/94/$6.00
Language: English
Abstract: The measurements of the ultraviolet response by some UV-enhanced CCDs have been realized. In particular, the quantum efficiency of coronene- and lumigen-coated and of **back-illuminated** ion-implanted CCDs have been measured in the 300 to 2500-AA spectral range. Very interesting performances have been found, mainly for one ion-implanted **CCD** with quantum efficiency values of more than 60% at 304 AA. Also some measurements of the **CCD** uniformity response and spatial resolution capability in this spectral region have been performed. The obtained results are very promising for the possibility of using these **semiconductor** detectors in the ultraviolet spectral region also with very good performance.
Subfile: A B

57/3,AB/14 (Item 14 from file: 2)
DIALOG(R)File 2:INSPEC

4722060 INSPEC Abstract Number: B9409-7230G-050
Title: A simple model of electron-bombarded **CCD** gain
Author(s): Reinheimer, A.L.; Blouke, M.M.
Author Affiliation: Sci. Imaging Technol. Inc., Beaverton, OR, USA
Journal: Proceedings of the SPIE - The International Society for Optical Engineering vol.2172 p.64-75
Publication Date: 1994 Country of Publication: USA
CODEN: PSISDG ISSN: 0277-786X
U.S. Copyright Clearance Center Code: 0 8194 1467 0/94/$6.00
Conference Title: Charge-Coupled Devices and Solid State Optical Sensors IV
Conference Sponsor: SPIE; IS&T
Conference Date: 7-8 Feb. 1994 Conference Location: San Jose, CA, USA
Language: English
Abstract: In earlier work, a model of the **back illuminated CCD** was presented and used to predict optical quantum efficiency. In this work the authors expand on the model and find an analytical solution for the probability of collection of a carrier generated at a given depth. They apply their solution to find the theoretical quantum efficiencies for both electron bombardment and optical illumination and compare them to measurements taken on thinned, backside-enhanced, non-AR coated devices. A single set of parameters is found which shows a reasonable fit to both sets of data. Earlier models of electron bombarded **CCD**'s have failed to explain the measured non-zero gain at low energies, however their model shows non-zero gain at all energies.
Subfile: B

57/3,AB/15 (Item 15 from file: 2)
DIALOG(R)File 2:INSPEC

04283136 INSPEC Abstract Number: B9301-7230G-034
Title: **Back illuminated** 2048*2048 charge-coupled device performance
Author(s): Gladhill, K.W.; Blouke, M.M.; Marriott, P.; Houck, T.; Corrie, B.; Marsh, H.
Author Affiliation: Tektronix Inc., Beaverton, OR, USA
Journal: Proceedings of the SPIE - The International Society for Optical Engineering vol.1656 p.585-98
Publication Date: 1992 Country of Publication: USA
CODEN: PSISDG ISSN: 0277-786X
U.S. Copyright Clearance Center Code: 0 8194 0810 7/92/$4.00
Conference Title: High-Resolution Sensors and Hybrid Systems
Conference Sponsor: SPIE; Soc. Imaging Sci. Technol
Conference Date: 10-14 Feb. 1992 Conference Location: San Jose, CA, USA
Language: English
Abstract: The authors discuss the performance of the **back-illuminated** 2048*2048 imaging array device. The TK2048E charge-coupled device (**CCD**) full frame imager is a three phase polysilicon gate buried channel device utilizing mini channel and multi-pinned phase technology. Physical structure allows simultaneous readout of each 1024*1024 quadrant, or read out of the entire array through any one of four identical output MOSFETs. Test results for noise, gain, dark current, charge transfer efficiency, full well, dark and hot defects, quantum efficiency, and imaging are reviewed.
Subfile: B

57/3,AB/16 (Item 16 from file: 2)
DIALOG(R)File 2:INSPEC

04283047 INSPEC Abstract Number: B9301-7230G-004
Title: An electron-bombarded **CCD** image intensifier with a GaAs photocathode
Author(s): Enloe, W.; Sheldon, R.; Reed, L.; Amith, A.
Author Affiliation: ITT Electro-Opt. Products Div., Roanoke, VA, USA
Journal: Proceedings of the SPIE - The International Society for Optical Engineering vol.1655 p.41-9
Publication Date: 1992 Country of Publication: USA
CODEN: PSISDG ISSN: 0277-786X
U.S. Copyright Clearance Center Code: 0 8194 0809 3/92/$4.00
Conference Title: Electron Tubes and Image Intensifiers
Conference Sponsor: SPIE; IS&T
Conference Date: 10-11 Feb. 1992 Conference Location: San Jose, CA, USA
Language: English
Abstract: A successful electron-bombarded **CCD** (EB-**CCD**) image intensifier with a GaAs photocathode was demonstrated. This photocathode was a standard ITT negative-electron-affinity (NEA) GaAs photocathode. Imagery was obtained from this device. The intensifier incorporated an RCA **back-illuminated** frame-transfer **CCD** , designed for electron detection and mounted in a vacuum compatible package. The cathode had a photoresponse of 965 mu A/lm at 6 kV-equivalent to 1166 mu A/lm at an electric field typical of proximity-focused image intensifiers (80 V/mil). A full-well signal was obtained with 2.5*10/sup -5/ fc photocathode illumination and 6-kV cathode-to-**CCD** bias. A photocathode life in excess of 280 hours at 1*10/sup -4/ fc illumination was demonstrated.
Subfile: B

57/3,AB/17 (Item 17 from file: 2)
DIALOG(R)File 2:INSPEC

03515630 INSPEC Abstract Number: B90004018
Title: Recent developments in large area scientific **CCD image sensors**
Author(s): Janesick, J.; Elliott, T.
Author Affiliation: Jet Propulsion Lab., California Inst. of Technol., Pasadena, CA, USA
Journal: Proceedings of the SPIE - The International Society for Optical Engineering vol.1071 p.115-33
Publication Date: 1989 Country of Publication: USA
CODEN: PSISDG ISSN: 0277-786X
Conference Title: Optical Sensors and Electronic Photography
Conference Sponsor: SPIE; SPSE
Conference Date: 16-18 Jan. 1989 Conference Location: Los Angeles, CA, USA
Language: English
Abstract: The design and performance of a 1024*1024 pixel charge-coupled device (**CCD**) imager are described. This device is fabricated utilizing a 3-phase, three-level polysilicon gate process. The chip is thinned and is employed in the **back-illumination** mode. Detailed measurements including imagery, read noise, full well capacity, charge transfer efficiency linearity, dark current, spectral response, residual image, and charge collection efficiency are reported.
Subfile: B

57/3,AB/18 (Item 1 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

04624956
E.I. No: EIP97023516250
Title: 200 multiplied by 200 **CCD image sensor** fabricated on high-resistivity silicon
Author: Holland, S.E.; Goldhaber, G.; Groom, D.E.; Moses, W.W.; Pennypacker, C.R.; Perlmutter, S.; Wang, N.W.; Stover, R.J.; Wei, M.
Corporate Source: Univ of California, Berkeley, CA, USA
Conference Title: Proceedings of the 1996 IEEE International Electron Devices Meeting
Conference Location: San Francisco, CA, USA Conference Date: 19961208-19961211
E.I. Conference No.: 46059
Source: Technical Digest - International Electron Devices Meeting 1996. IEEE, Piscataway, NJ, USA,96CH35961. p 911-914
Publication Year: 1996
CODEN: TDIMD5 ISSN: 0163-1918
Language: English
Abstract: A charge coupled device (**CCD**) **image sensor** fabricated on high-resistivity silicon is described. The resistivity, about 10,000 Omega -cm, allows for operation of the **CCD** with the entire 300 mu m substrate depleted. This results in better red to near infrared response when compared to conventional and thinned CCDs. In addition the **CCD** has good blue response when **back illuminated**. Since the substrate is fully depleted, thinning, with its inherent difficulties, is not necessary in order to enhance blue response. (Author abstract) 13 Refs.

57/3,AB/19 (Item 2 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

04181272
E.I. No: EIP95031610517
Title: Development of integrating radiation imagers with diamond MIS devices
Author: Marchywka, Mike; Binari, Steven C.; Pehrsson, Pehr E.; Moses, J. Daniel
Corporate Source: Naval Research Lab., Washington, DC, USA
Conference Title: Diamond-Film Semiconductors
Conference Location: Los Angeles, CA, USA Conference Date: 19940127-19940128
E.I. Conference No.: 21281
Source: Proceedings of SPIE - The International Society for Optical Engineering v 2151 1994. Publ by Society of Photo-Optical Instrumentation Engineers, Bellingham, WA, USA. p 110-120
Publication Year: 1994
CODEN: PSISDG ISSN: 0277-786X ISBN: 0-8194-1446-8
Language: English
Abstract: Diamond has long been recognized as a promising material to fabricate robust, solar-blind radiation detectors. In this work, we present initial results from our program to fabricate a 2D imager using synthetic diamond. We observed the desired low dark current and spectral response properties in MSM detectors made on type-IIa diamond and integrating photoresponse was observed in MIS capacitors fabricated on type IIb diamond. Subsequent modeling of the MIS photoresponse supports the conclusion that electrons are stored at the diamond-insulator interface which makes it feasible to consider a diamond **CCD**. We discuss relevant processing steps and a plan to make a thin, **back-illuminated CCD** for VUV and UV imaging applications. 15 Refs.

57/3,AB/20 (Item 3 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

03353408
E.I. Monthly No: EIM9112-065092
Title: **Back-illuminated** 1024 x 1024 quadrant readout **imager**: operation and screening **test** results.
Author: Marsh, Harry H.; Hayes, Raymond; Blouke, Morley M.; Yang, Fanling H.
Corporate Source: Tektronix Inc., Beaverton, OR, USA
Conference Title: Charge-Coupled Devices and Solid State Optical Sensors II
Conference Location: San Jose, CA, USA Conference Date: 19910225
E.I. Conference No.: 15290
Source: Proceedings of SPIE - The International Society for Optical Engineering v 1447. Publ by Int Soc for Optical Engineering, Bellingham, WA, USA. p 298-309
Publication Year: 1991
CODEN: PSISDG ISSN: 0277-786X ISBN: 0-8194-0546-9
Language: English
Abstract: The Tektronix **CCD** Manufacturing Group has applied their thinning, back surface enhancement, and anti-reflection coating processes to produce a 1024 multiplied by 1024 charge- coupled device imager with high quantum efficiency (QE) from 350 to 1100 nm. The TK1024AB device, designed for scientific imaging applications, features low noise, wide dynamic range, excellent charge transfer efficiency and low dark current. The quad-output architecture permits the simultaneous readout of each quarter of the device, reducing the time to read out the **CCD** to that of a 512 multiplied by 512 device. This paper summarizes the test results from several lots of TK1024AB runs. The subjects covered include QE, on-chip amplifier characteristics, dark current measurement, CTE and characterization of various defects. The paper also describes the test hardware and procedures used to evaluate the performance of the devices. 4 Refs.

57/3,AB/21 (Item 4 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

03037170
E.I. Monthly No: EIM9103-011086
Title: Recent charge-coupled device optimization results at steward observatory.
Author: Lesser, M. P.
Corporate Source: Univ of Arizona, Tucson, AZ, USA
Conference Title: Charge-Coupled Devices and Solid State Optical Sensors
Conference Location: Santa Clara, CA, USA Conference Date: 19900212
E.I. Conference No.: 13861
Source: Proceedings of SPIE - The International Society for Optical Engineering v 1242. Publ by Int Soc for Optical Engineering, Bellingham, WA, USA. p 164-169
Publication Year: 1990
CODEN: PSISDG ISSN: 0277-786X ISBN: 0-8194-0289-3
Language: English
Abstract: Recent research efforts aimed at optimizing charge-coupled devices (CCDs) after their manufacture to achieve maximum quantum efficiency, wide spectral bandpass, and excellent cosmetics and surface flatness are discussed. We present results of a new acid thinning agitation technique which produces very uniform, high quality surfaces on large area square and rectangular CCDs and 4' silicon wafers for **back illuminated** operation. In particular we present thinning results of Ford Aerospace 2048 multiplied by 2048 pixel CCDs. A method of cleaning thinned CCDs before antireflection coating for increased QE is also discussed. The results of initial experiments with a new packaging method to mount thinned CCDs while maintaining a very flat imaging surface are presented. This bump bonding mounting technique increases yield due to reduced handling and robust packaging and is expandable to tightly packed large area focal plane mosaics. (Author abstract) 7 Refs.

57/3,AB/22 (Item 5 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

02946353
E.I. Monthly No: EIM9008-035089
Title: New process for thinned, **back-illuminated CCD** imager devices.
Author: Huang, C. M.; Burke, B. E.; Kosicki, B. B.; Mountain, R. W.; Daniels, P. J.; Harrison, D. C.; Lincoln, G. A.; Usiak, N.; Kaplan, M. A.; Forte, A. R.
Corporate Source: MIT Lincoln Lab, Lexington, MA, USA
Conference Title: International Symposium on VLSI Technology, Systems and Applications - Proceedings of Technical Papers
Conference Location: Taipei, Taiwan Conference Date: 19890517
E.I. Conference No.: 13385
Source: Int Symp VLSI Technol Sys Appl Proc Tech Pap. Publ by IEEE, IEEE Service Center, Piscataway, NJ, USA. Available from IEEE Service Cent (cat n 89CH2631-0), Piscataway, NJ, USA. p 98-101
Publication Year: 1989
Language: English
Abstract: A manufacturable process for converting a front-illuminated **CCD** imager to its **back-illuminated** counterpart is described. Low-light-level imaging is enhanced, especially in the blue and deep-ultraviolet region. Quantum efficiency is significantly improved by forming a shallow p** plus accumulation layer on the back surface using a laser-induced activation of very-low-energy boron implantation. The fabrication process has been applied to 64- multiplied by 128-, 420- multiplied by 420-, and 420- multiplied by 840-pixel imagers. An example of imaging obtained with the 420- multiplied by 420-pixel imager is shown and discussed. Experimental results showing the enhanced response of the 64- multiplied by 128-pixel imager are presented. 7 Refs.

57/3,AB/23 (Item 6 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

02505973
E.I. Monthly No: EI8801008029
Title: ULTRAVIOLET AND EXTREME ULTRAVIOLET RESPONSE OF CHARGE-COUPLED-DEVICE DETECTORS.
Author: Stern, R. A.; Catura, R. C.; Kimble, R.; Davidsen, A. F.; Winzenread, M.; Blouke, M. M.; Hayes, R.; Walton, D. M.; Culhane, J. L.
Corporate Source: Lockheed Palo Alto Research Lab, Palo Alto, CA, USA
Source: Optical Engineering v 26 n 9 Sep 1987 p 875-883
Publication Year: 1987
CODEN: OPEGAR ISSN: 0091-3286
Language: ENGLISH
Abstract: We present results of a program to enhance the ultraviolet and extreme ultraviolet response of charge-coupled devices. The ultimate goal of our program is to develop a large format device with both high and stable quantum efficiency from 100 to 3000 A that can be used as a windowless **imaging detector** in a space environment. Ultraviolet quantum efficiency measurements have been made for several ion-implanted and laser-annealed test CCDs specially fabricated for this program. Quantum efficiencies as high as 22% at 2500 A, where the absorption depth in silicon is approx. 55 A, have been observed in one such test **CCD**. Quantum efficiency measurements of standard **back-illuminated** RCA and Tektronix CCDs are presented. (Edited author abstract) 18 refs.

57/3,AB/24 (Item 1 from file: 94)
DIALOG(R)File 94:JICST-EPlus

03968111 JICST ACCESSION NUMBER: 99A0080929 FILE SEGMENT: JICST-E
Topics of **CCD camera** and video. **Back-illuminated** **CCD** digital **camera**. Supersensitive and high-speed 14 bit **CCD camera** Pluto .
URYU KYOKO (1)
(1) Waivovshisutemu
Hikari Araiansu(Optical Alliance), 1998, VOL.9,NO.12, PAGE.31-32, FIG.5
JOURNAL NUMBER: L1746AAB ISSN NO: 0917-026X CODEN: HARAE
UNIVERSAL DECIMAL CLASSIFICATION: 621.397.61
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Introduction article
MEDIA TYPE: Printed Publication
ABSTRACT: Pluto, a **back-illuminated CCD camera**, the product of Pixel Vision Co., U.S.A. was introduced. The **back-illuminated CCD** used in this **camera** has a quantum efficiency higher than that of surface-illuminated **CCD**, and has 2-3 times higher sensitivity in the visible range. It adopts antireflective coating of a high reliability and does not require periodic re-coating. The dark current nonuniformity is prevented by the adoption of the thermoelectric cooling, and the low noise is realized using split frame transfer type **CCD**.

57/3,AB/25 (Item 2 from file: 94)
DIALOG(R)File 94:JICST-EPlus

03002083 JICST ACCESSION NUMBER: 96A0919233 FILE SEGMENT: JICST-E
Development of an X-Ray Microscope Using a Pulse Train Laser. (II).
OYAMA HITOSHI (1); ANDO KOZO (1); AOYAGI YOSHINOBU (1); HIROSE HIDEO (2); EGUCHI NOZOMI (3); KODATE KASHIKO (3); HARA TAMIO (4); KINJO YASUTO (5); SHINOHARA KUNIO (6)
(1) Riken Inst. of Phys. and Chem. Res.; (2) Shimadzu Corp.; (3) Japan Women's Univ.; (4)Toyota Technol. Inst.; (5) Tokyo Metrop. Isot. Res. Cent.; (6) Univ. of Tokyo, Fac. of Med.
Reza Kagaku Kenkyu(Laser Science Progress Report of IPCR), 1996, NO.18, PAGE.7-8, FIG.4, REF.1
JOURNAL NUMBER: G0834BAK ISSN NO: 0289-8411
UNIVERSAL DECIMAL CLASSIFICATION: 535-34
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Original paper
MEDIA TYPE: Printed Publication
ABSTRACT: We are developing a soft X-ray microscope in order to observe a bio-materials. Schwarzschild mirror coated with multilayer film was used to magnify bio-materials. As soft X-ray was produced by a pulse train laser with energy of 1J. And a **back illuminated CCD camera** was used to detect X-ray signals. (author abst.)

64/3,AB/1 (Item 1 from file: 94)
DIALOG(R)File 94:JICST-EPlus

01159705 JICST ACCESSION NUMBER: 91A0093559 FILE SEGMENT: JICST-E
Amorphous silicon visible light photo-sensor.
OKUNO TETSUHIRO (1); TAKEDA YOSHIHIKO (1); MACHIDA TOMOHIRO (1); KANEIWA MINORU (1); YAMAMOTO YOSHIHIRO (1); TSUJI TAKATERU (1)
(1) Sharp Corp., Energy Conversion Lab.
Shapu Giho(Sharp Technical Journal), 1990, NO.47, PAGE.27-31, FIG.10, TBL.1, REF.8
JOURNAL NUMBER: G0524AAD ISSN NO: 0285-0362 CODEN: STEJD
UNIVERSAL DECIMAL CLASSIFICATION: 621.383.5 535.24+535.084
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Original paper
MEDIA TYPE: Printed Publication
ABSTRACT: We have developed a photo-sensor for visible light using amorphous silicon(a-Si) film. An a-Si photodiode has been fabricated by stacking p, i and n type a-Si films. By means of precise control of the each thickness of p, i and n type a-Si films, a spectral response of the device with peak **wavelength** of 560nm and an infrared spectral response ratio of 1.5%, which is similar to that of human eye, has been obtained without an infrared cut-off filter. Furthermore, making the most of the advantages of a-Si being thin film, a face-down bonded device has been easily fabricated by forming the output signal terminal on the **opposite side** to the incident light. Thereby, a chip size of 3mm square has been achieved. In this paper, performance and process technologies of the sensor are shown and also application in an automatic exposure system of a **camera** is described. (author abst.)

64/3,AB/2 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

013923995
WPI Acc No: 2001-408208/200143
XRAM Acc No: C01-123574
XRPX Acc No: N01-302070
Optical sensors for **detecting** an analyte e.g. in medical applications comprise a sensing layer and a thin film electroluminescent device
Patent Assignee: UNIV IOWA STATE RES FOUND INC (IOWA); UNIV MICHIGAN (UNMI); UNIV MICHIGAN TECHNOLOGY (UNMT)
Inventor: AYLOTT J W; CHEN-ESTERLIT Z; FRIEDL J H; KOPELMAN R; SAVVATEEV V N; SHINAR J
Number of Countries: 095 Number of Patents: 005
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200138857	A1	20010531	WO 2000US31921	A	20001121	200143	B
AU 200127250	A	20010604	AU 200127250	A	20001121	200153	
US 6331438	B1	20011218	US 99448499	A	19991124	200205	
EP 1171764	A1	20020116	EP 2000990188	A	20001121	200207	
			WO 2000US31921	A	20001121		
KR 2001101642	A	20011114	KR 2001709250	A	20010723	200230	

Priority Applications (No Type Date): US 99448499 A 19991124
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200138857	A1	E	77	G01N-021/64	

Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW
Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW

AU 200127250	A		G01N-021/64	Based on patent WO 200138857
US 6331438	B1		G01N-021/64	
EP 1171764	A1	E	G01N-021/64	Based on patent WO 200138857

Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SI

KR 2001101642	A		G01N-021/64

Abstract (Basic): WO 200138857 A1
Abstract (Basic):
NOVELTY - An **optical sensor** comprises a **sensing** layer and a thin film electroluminescent device. The sensing layer contains an indicator agent which reacts **optically** with an analyte.
DETAILED DESCRIPTION - An **optical sensor** comprises: a **sensing** layer (A), and a thin film electroluminescent device (B). (A) contains an indicator agent (A1) which can react **optically** with an analyte. (B) comprises a luminescent layer which emits light of a predetermined **wavelength**. The luminescent layer is **optically** coupled to (A). (A1) absorbs light energy of the

predetermined **wavelength** and in the presence of at least one analyte, generates an **optical** response which is **detectable**, recognizable and indicates the presence of the analyte. INDEPENDENT CLAIMS are also included for the following:

(1) an array of **optical sensor** comprising a number of sensing units. At least some of the sensing units differ in their chemical formulations and their **optical** characteristics, and hence react **optically** differently with an individual analyte of interest. Each of the sensing units comprises (A) and (B);

(2) a kit comprising a number of **optical sensors**. Each **sensor** comprises an anode, a hole transporting layer, an electron transporting layer, a cathode, (A) **optically** coupled to the electroluminescent hole or the electron transporting layer, and a **detector** for **detecting** the **optical** response from (A). The cathode and anode are capable of activating the emission of electroluminescence of a predetermined **wavelength** from either the hole transporting layer or the electron transporting layer; and

(3) detection of an analyte in a fluid sample by introducing a sample in an **optical sensing** unit containing (A) and (B), and contacting the sample with (A); activating (B) to emit light energy of predetermined **wavelength** to (A); **optically detecting** the **optical** response of (A); and evaluating the response to determine the presence or concentration of at least one analyte of interest in the sample.

USE - For detecting an analyte (particularly oxygen, ions, antibodies, antigens, nucleotides and microbial receptor proteins) in a sample (preferably fluid sample) (all claimed). For detecting and quantifying biological, chemical and physical analytes. The **optical sensors** can be used to detect e.g. DNA base pairs, glucose or lactate. The sensors are also useful for fire fighters, persons handling pollutants, medical or biomedical persons, and military, to detect contamination (particularly microelectronics clean room, pharmaceutical, rapidly detect localize and remove sodium, various chlorine or fluorine based acids, other hazardous contamination, chemical or biological warfare agents, radioactive contamination in air, contaminated surfaces of buildings, vehicle, ammunition, weapons, or poison in drinking water and food supplies, to detect residues of gun powder, illicit drugs, explosives, alcohol vapors on the body, clothes, or belongings of a suspect or victim).

ADVANTAGE - The sensors analyze the analytes in real time, are easy to use, have high sensitivity and specificity, are inexpensive and disposable. The cost of materials is also minute in comparison to Group III-V compound single crystal-activated sensors and the deposition conditions are not very rigid. The sensor units can be readily integrated with microdisplay technologies. The disposable sensors are small and active enough for a person to wear them and obtain a status reading at any time. If a person is exposed to harmful environment, curative actions can be taken at once, rather than waiting for receipt of the analysis results. The disposable integrated probe or sensor is easily replaceable.

pp; 77 DwgNo 0/16

64/3,AB/4 (Item 1 from file: 347)
DIALOG(R)File 347:JAPIO

04173222
HOLOGRAPHIC **PHOTOELECTRIC CONVERTER**

PUB. NO.: 05-164922 [JP 5164922 A]
PUBLISHED: June 29, 1993 (19930629)
INVENTOR(s): IWAASA YUJI
TAKEUCHI SHOICHI
APPLICANT(s): ASAHI GLASS CO LTD [000004] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 03-353831 [JP 91353831]
FILED: December 18, 1991 (19911218)
JOURNAL: Section: P, Section No. 1629, Vol. 17, No. 566, Pg. 87, October 14, 1993 (19931014)

ABSTRACT

PURPOSE: To simplify the structure without requiring any color filter and to apply this converter to color processing by utilizing a reflection type hologram.

CONSTITUTION: This holographic **photoelectric converter** is equipped with a transparent cover 3 which has its light incidence surface formed of a 1st surface 3a in a wedgelike shape viewed sideward, the reflection type hologram 4 provided additionally on the 2nd surface 3b of the transparent cover 3, and a **photodetecting** element 2 which is arranged **opposite** the 3rd **surface** 3c of the transparent cover and has plural picture elements. The light which is made incident from the 1st surface 3a of the transparent cover 3 is reflected by the reflection type hologram 4 on the 2nd surface 3b, transmitted from the 3rd surface 3c, and made incident on the **photodetecting** element 2. At this time, only specific **wavelength** of the incident light is reflected by the hologram 4 through the reflecting (diffracting) operation of the hologram 4 to irradiate the picture elements of the **photodetecting** element 2, so the **wavelength** is selected by the hologram 4. Namely, the property of the hologram 4 is utilized to apply the converter to the color processing.

64/3,AB/5 (Item 2 from file: 347)
DIALOG(R)File 347:JAPIO

01070145
ANALYZER

PUB. NO.: 58-007545 [JP 58007545 A]
PUBLISHED: January 17, 1983 (19830117)
INVENTOR(s): NOBUTO TORU
HAYASHI ASAO
KANBARA KOJI
TOJIKI HITOMI
ATOMACHI NAGAHIRO
APPLICANT(s): OLYMPUS OPTICAL CO LTD [000037] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 56-105647 [JP 81105647]
FILED: July 08, 1981 (19810708)
JOURNAL: Section: P, Section No. 188, Vol. 07, No. 78, Pg. 38, March 31, 1983 (19830331)

ABSTRACT

PURPOSE: To shorten a processing time, by a method wherein transmitting light or reflecting light is collected by image sensors each, which is positioned facing and **opposite** to a collecting **surface** of each of a plural number of **photoelectric converting** elements and is firmly adhered to it, and a converting output is obtained through selection of the photoelectric element.

CONSTITUTION: A light entering side of image sensors 16, 16', and 16'' is constituted such that a large number of types of strip-shaped **optical** filters .lambda.(sub 1), .lambda.(sub 2)....lambda.(sub n), being in a spectral property, adjoin each other and are aligned in a plane manner. A **photoelectric converting** element (SIT element) is firmly adhered to the back thereof in a condition that the collecting surface of the element is positioned facing and opposite to said back. The SIT element, whose collecting surface contacts the strip-shaped **optical** filter corresponding to a desired **wavelength** suitable for a measuring item, is selected and outputted through assignment of an address to feed it to a computing circuit, and this permits the sharp shortening of a measuring time.

67/3,AB/1 (Item 1 from file: 347)
DIALOG(R)File 347:JAPIO

05669673
LIGHT GUIDE TYPE REDUCING IMAGE SENSOR AND ITS MANUFACTURE

PUB. NO.: 09-284473 [JP 9284473 A]
PUBLISHED: October 31, 1997 (19971031)
INVENTOR(s): MIYATA AKIO
APPLICANT(s): SHARP CORP [000504] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 08-091299 [JP 9691299]
FILED: April 12, 1996 (19960412)

ABSTRACT

PROBLEM TO BE SOLVED: To attain high resolution and miniaturization by constituting a **photoelectric conversion** element array of plural **photoelectric conversion** element arrays arranged at positions respectively parallel and orthogonal with the light incident face of a light guide substrate.

SOLUTION: Three **photoelectric conversion** element arrays 5a to 5c are fixed to the light guide **substrate** 4. Namely **two** arrays are fixed to the both sides of a tip face vertical to the light incident face of the light guide **substrate** 4 and **one** array is fixed to the **opposite face** of the light incident face. Then in order that reflected light from the surface of an original irradiated from a **light source** is converged to a micro lens array 2 and guided to each arrays 5a to 5c, a bent light guide array 3 is formed. In addition in order that light emitted from the array 3 is converged by each arrays 5a to 5c, a micro-lens array is provided corresponding to them on the light emitting side of the substrate 4.

67/3,AB/2 (Item 2 from file: 347)
DIALOG(R)File 347:JAPIO

01990966
IMAGE SENSOR

PUB. NO.: 61-205066 [JP 61205066 A]
PUBLISHED: September 11, 1986 (19860911)
INVENTOR(s): WATANABE YOSHIO
APPLICANT(s): TOSHIBA CORP [000307] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 60-044576 [JP 8544576]
FILED: March 08, 1985 (19850308)
JOURNAL: Section: E, Section No. 477, Vol. 11, No. 36, Pg. 139, February 03, 1987 (19870203)

ABSTRACT

PURPOSE: To decide easily the installing position of a **photoelectric conversion** elements by arraying many said conversion elements on a semiconductor substrate having a single plane together with several light emitting elements and setting the position of the substrate so that the beams sent from those light emitting elements form images at the position of the original pictures via an **optical** lens.

CONSTITUTION: Light emitting diodes 12a-12c are actuated when the position of a semiconductor substrate 10 is decided in a production mode. The **substrate** 10 is set **first** at the position approximately opposite to an original board 13 via a convex lens 14 so that the substrate 10 is positioned at the rear focal point of the lens 14. The beams 16a-16c of the diodes 12a-12c are irradiated on the board 13 via the lens 14. The substrate 10 is moved reciprocatively toward an arrow head X or its **opposite side** with visual recognition so that those beams 16a-16c all form images on the board 14. Thus the focal distance is controlled together with adjustment of the substrate 10. Then the rear focal point of the lens 14, e.g., the set position of the substrate 10 is decided for attachment of the substrate 10 into an image sensor main body.

70/3,AB/1 (Item 1 from file: 347)
DIALOG(R)File 347:JAPIO

05867082
SOLID-STATE IMAGE SENSING DEVICE AND SOLID-STATE IMAGE SENSING DEVICE APPLICATION SYSTEM

PUB. NO.: 10-150182 [JP 10150182 A]
PUBLISHED: June 02, 1998 (19980602)
INVENTOR(s): TANAKA NAGATAKA
MABUCHI KEIJI
OBA HIDEFUMI
SASAKI MICHIO
MIYAGAWA RYOHEI
YAMASHITA HIROSHI
IIDA YOSHINORI
YAMAGUCHI TETSUYA
IHARA HISANORI
APPLICANT(s): TOSHIBA CORP [000307] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 09-203816 [JP 97203816]
FILED: July 14, 1997 (19970714)

ABSTRACT

PROBLEM TO BE SOLVED: To increase a **photoelectric conversion** gain in a unit cell to obtain the high sensitivity of a solid-state image sensing device and also to suppress bursting-in of noise from a vertical signal conductor or the like to make the realization of low noise possible.

SOLUTION: Gate wirings 23 and 24 of first and second readout transistors and a drain 25 of the first readout transistor are formed between first and second diodes 21 and 22 on an element region 20. This drain 25 is connected with a gate 27 of an amplitude transistor via a jump wiring 26. Thus gate 27 of the amplitude transistor is connected also with a source 31, which is formed on an element region 30 of a reset transistor, of the reset transistor via the wiring 26. The source 31 and a drain 33 on the **opposite side** to the source 31 are formed holding a gate wiring 32 of the reset transistor between them on the region 30 of the above reset transistor.

70/3,AB/2 (Item 2 from file: 347)
DIALOG(R)File 347:JAPIO

02136666
PICTURE INPUT DEVICE

PUB. NO.: 62-053566 [JP 62053566 A]
PUBLISHED: March 09, 1987 (19870309)
INVENTOR(s): TOKUMITSU JUN
APPLICANT(s): CANON INC [000100] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 60-193024 [JP 85193024]
FILED: September 03, 1985 (19850903)
JOURNAL: Section: E, Section No. 530, Vol. 11, No. 244, Pg. 9, August 08, 1987 (19870808)

ABSTRACT

PURPOSE: To miniaturize the titled device by arranging a transparent picture between an illuminating means and a solid-state image pickup element while the solid-state image pickup element contacts substantially.

CONSTITUTION: A light diffusing plate 8 is arranged vertically to the **optical** axis of an **optical** system of an illuminating means and a film 10 on which a picture is recorded already contacts closely a **face opposite** to the illuminating means of the light diffusing plate 8. The light flux from the illuminating **light source** 2 passes partly through a condensor lens 6 and the other part is reflected by a reflection mirror 4 and passes through the condenser lens 6, irradiates the diffusion plate 8 and the film 10 is illuminated with comparatively uniform strength by the operation of the diffusion plate 8. Thus, each **photodetector** element of the solid-state image pickup element 12 which is in contact with the film 10 reads picture information of the picture of the film 10.

70/3,AB/3 (Item 3 from file: 347)
DIALOG(R)File 347:JAPIO

01653066
ELECTROSTATIC RECORDING DEVICE

PUB. NO.: 60-131566 [JP 60131566 A]
PUBLISHED: July 13, 1985 (19850713)
INVENTOR(s): SHIMAZAKI TAKASHI
APPLICANT(s): TOSHIBA CORP [000307] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 58-240429 [JP 83240429]
FILED: December 20, 1983 (19831220)
JOURNAL: Section: P, Section No. 407, Vol. 09, No. 296, Pg. 28, November 22, 1985 (19851122)

ABSTRACT

PURPOSE: To reduce the size of a device by using a **light emitting diode** array as a light image irradiating means and forming an electrostatic latent image on a dielectric.

CONSTITUTION: Electrostatic recording paper 24 stored in a main body 21 is unrolled and conveyed by a conveyor roller couple 23 and charged electrostatically in the middle of its conveyance by an **LED** electrode 24 according to a print pattern to form an electrostatic latent image. This electrode 24 consists of a **photoelectric converting** element 34 formed by laminating a transparent electrode 32 and a photosensitive layer on the surface of a transparent base 31 on the side of the recording paper 22 and the **LED** array 25 adhered at the **opposite side** of the photosensitive layer 33 of the element 36, and the electrode 24 is arranged oppositely to the recording paper 22 across an air gap 36. Then, the element 34 is irradiated with a light image to be recorded by the array 35 to hold the image on the dielectric layer 29. Consequently, the light image irradiated part 35 and photosensitive layer 33 become smaller and the size and weight of the device are reduced.

70/3,AB/4 (Item 4 from file: 347)
DIALOG(R)File 347:JAPIO

01303608
FOCUSING DETECTING DEVICE

PUB. NO.: 59-015208 [JP 59015208 A]
PUBLISHED: January 26, 1984 (19840126)
INVENTOR(s): OIKAMI KENICHI
KIMURA KENJI
IDA MASATOSHI
APPLICANT(s): OLYMPUS OPTICAL CO LTD [000037] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 57-103086 [JP 82103086]
FILED: June 17, 1982 (19820617)
JOURNAL: Section: P, Section No. 274, Vol. 08, No. 105, Pg. 35, May 17, 1984 (19840517)

ABSTRACT

PURPOSE: To obtain an output having a good S/N, by making one **photodetector** correspond to one **luminous** flux split element, so that a **photodetector** whose **photodetecting** area has desired size can be used.

CONSTITUTION: A minute lens array 12 is placed on a prearranged focal plane of an image forming **optical** system 11 or its vicinity, and by this minute lens array 12, an image of an exit pupil of the image forming **optical** system 11 is formed on a **photodetector** train 13 formed by placing one **photodetector** in accordance with each minute lens. Each **photodetector** 13-1-13-5 of the **photodetector** train 13 is arrayed so that each section in the exit pupil of the image forming **optical** system 11 of a **luminous** flux which is made incident through each corresponding minute lens 12-1-12-5 contains an **optical** axis of the image forming **optical** system 11, and also the odd **photodetectors** 13-1, 13-3... and the even **photodetectors** 13-2, 13-4... **photodetect** mainly each **luminous** flux passing through an area of each **opposite side** of the exit pupil whose boundary is a plane containing the **optical** axis of the image forming **optical** system 11. Subsequently, a **photoelectric converting** output of each **photodetector** of the **photodetector** train 13 is read out successively, and in accordance with comparison of an output distribution of the odd **photodetector** group and an output distribution of the even **photodetector** group, the focal state is detected.

75/3,AB/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

008137256
WPI Acc No: 1990-024257/199004
XRPX Acc No: N90-018560
focus detecting appts. for SLR **camera** with auto-focus - has three measuring zones arranged in inverted U-shape with open side so that distance measuring zones are similarly located
Patent Assignee: ASAHI KOGAKU KOGYO KK (ASAO); ASAHI OPTICAL CO LTD (ASAO)
Inventor: KAWASAKI M; SHINDO O
Number of Countries: 015 Number of Patents: 006
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 351855	A	19900124	EP 89113354	A	19890720	199004	B
EP 351855	B1	19951122	EP 89113354	A	19890720	199551	
DE 68924880	E	19960104	DE 624880	A	19890720	199606	
			EP 89113354	A	19890720		
JP 9026541	A	19970128	JP 89184499	A	19890719	199714	
			JP 96182217	A	19890719		
US 5870635	A	19990209	US 89382287	A	19890720	199913	
			US 92865761	A	19920410		
			US 97871936	A	19970610		
JP 3153472	B2	20010409	JP 89184499	A	19890719	200122	
			JP 96182217	A	19890719		

Priority Applications (No Type Date): JP 88252827 A 19881006; JP 88180552 A 19880720
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 351855	A	E	48		
Designated States (Regional): AT BE CH DE ES FR GB GR IT LI LU NL SE					
EP 351855	B1	E	49	G03B-003/00	
Designated States (Regional): DE FR GB					
DE 68924880	E			G03B-003/00	Based on patent EP 351855
JP 9026541	A		28	G02B-007/34	Div ex application JP 89184499
US 5870635	A			G03B-013/36	Cont of application US 89382287
					Cont of application US 92865761
JP 3153472	B2		29	G02B-007/34	Div ex application JP 89184499
					Previous Publ. patent JP 9026541

Abstract (Basic): EP 351855 A

The focus detecting appts. includes an object distance measuring zone located above a centre portion of the finder field of view, and second and third object distance measuring zones located on the **opposite sides** of the centre portion of the finder field of view. Three automatic focusing **optical** systems converging converge the **luminous** fluxes of objects to be photographed in the three object distance measuring zones.

Three object distance measuring sensors e.g. **CCD** image sensors are provided on which the **luminous** fluxes of the objects in the three object distance measuring zones are converged by the

associated three automatic focusing **optical** systems.

ADVANTAGE - Point of view of photographer coincides with measuring zones. Distance of transfer of signal charges can be decreased

Abstract (Equivalent): EP 351855 B

A focus detecting apparatus for a **camera** having a finder (8) comprising an object distance measuring sensor array (S1, S2, S3) on which the **luminous** flux originating from objects to be photographed in an object distance measuring zone (12) corresponding to a field in a finder field of view (11) is converged by an **optical** system, and an object distance measuring arithmetic means (138) for integrating the output of the object distance measuring sensor array (S1, S2, S3) to detect the object distance in said object distance measuring zone (12) in accordance with the integrated value, wherein said sensor array (S1, S2, S3) comprises a **photoelectric converter** array (20, 30, 40) having a number of **photoelectric converting** elements, a monitor light receiving portion (22, 32, 42) in the vicinity of the **photoelectric converter** array (20, 30, 40) to receive the quantity of light incident upon said sensor array (S1, S2, S3) in order to control its charge integrating time, an integrating portion (ST) which integrates the signal charges obtained by said **photoelectric converting** elements, a signal charge transferring register (51) which outputs the signal charges to said arithmetic means (138), and control means for transferring the integrated signal charges from the integrating portion (ST) when the quantity of light received by the monitor light receiving portion (32) first amounts to a predetermined value prior to the lapse of a predetermined value prior to the lapse of a predetermined integration time or when a predetermined integration time lapses before the quantity of light received amounts to a predetermined value, characterised in that said sensor array (S1, S2, S3) has a charge holding portion (T1, T2, T3) which temporarily holds the integrated signal charges before their transfer to said transferring register (51), that said control means transfers all the signal charges held by the charge holding portion (T1, T2, T3) into the charge transferring register (51) after completion of said transferring of signal charges from the charge integrating portion (ST) to the charge holding portion (T1, T2, T3), that said object distance measuring zone (12) is a first measuring zone located above the centre of the finder field of view (11), that second and third measuring zones (13, 14) are located on **opposite sides** of the centre of the finder field of view (11), that one object distance measuring sensor (S2) of the sensor array and two additional sensors (S1, S3) of said sensor array of equal design corresponding to said first, second and third measuring zones (12, 13, 14) are arranged as an array of generally inverted U-shape, that the gains of the outputs of the object distance measuring sensors (S1, S2, S3) are independently variable, that each of said object distance measuring sensors (S1, S2, S3) has a separate monitor light receiving portion (22, 32, 42) and a separate integration time controlling portion (INT1, INT2, INT3) for starting and stopping its integration, and that said **photoelectric converter** arrays (20, 30, 40), said monitor light receiving portions (22, 32, 42), said charge holding portions (T1, T2, T3), said integration time control portions (INT1, INT2, INT3) and a common transferring register (51) are

formed on a single integrated circuit board.
(Dwg.3/32

75/3,AB/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX

007776213
WPI Acc No: 1989-041325/198906
XRPX Acc No: N89-031616
Colour image reader for copier - has three-colour separator having mirror for projecting colour lights onto **photoelectric converters** multiple images
Patent Assignee: KONICA CORP (KONS)
Inventor: ICHIHARA Y; ITO K; IZAWA T; WAKUI N
Number of Countries: 004 Number of Patents: 006
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
GB 2207830	A	19890208	GB 8814719	A	19880621	198906	B
JP 64001365	A	19890105	JP 87157006	A	19870623	198907	
DE 3821076	A	19890330	DE 3821076	A	19880622	198914	
US 4926249	A	19900515	US 88209416	A	19880620	199024	
GB 2207830	B	19911106				199145	
DE 3821076	C	19920730	DE 3821076	A	19880622	199231	

Priority Applications (No Type Date): JP 87157006 A 19870623
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
GB 2207830	A		31		
DE 3821076	C		14	H04N-001/46	

Abstract (Basic): GB 2207830 A
The colour image reader has an original colour image document irradiated by a **light source** (22) moving relative to the document and the reflected light introduced into a colour separator (30) through a lens (1). The original colour image is separated into multiple colour component images which are respectively read and **photo-electrically converted** into signals by CCDs (4,5,6). The **light source** (22) is positioned to one side of the **optical** axis of the lens and the CCDs are disposed to the other side of the axis. The colour separator can form the colour component images on the same plane. The lens (1) and colour separation prism (30) can bea assembled in a single unit.
ADVANTAGE - High positioning accuracy. Free from deviation of picture element and change of colour tone caused by heat of **light source** and unbalanced **CCD** output.
1/15
Abstract (Equivalent): DE 3821076 C
The device has a movable **light source** and a halogen lamp for illuminating a sheet with a colour picture mirror system directs the light reflected from the sheet to a lens (1) which focusses the reflected light in order to produce a picture or image.
The **light source** is mounted on one side of the **optical** axis of the lens. On the **optical** axis is a colour separating unit for breaking up the light into a number of colour

pictures in different colours. The colour separating unit has a number of mirrors (30,34) for the colour pictures desired, arranged so that they project the separate pictures or images parallel to one another in the same direction on several converters (4,5,6), each having a light sensitive surface. These **photoelectric converters** are on the **opposite side** of the **optical** axis to the lens.

USE/ADVANTAGE - The advantage is a reduction in the heating effect of the **light source**. It is suitable e.g. for the photographic industry. (Dwg.2/15)

Abstract (Equivalent): GB 2207830 B

A device for assembling a lens and a prism into one unit, comprising: a base for fixing a lens barrel incorporating said lens, a stop means for positioning said prism, said stop means being fixed to said base and adapted to come in contact with one edge of said prism, an end surface of said lens barrel adapted to come in contact with a first surface of said prism, said first surface including said edge, a prism-fixing means capable of being coupled with said base, said prism-fixing means fixing a second surface of said prism, said second **surface** being **opposite** to said edge.

Abstract (Equivalent): US 4926249 A

The document having a colour original image is irradiated by a **light**)**source** moving relatively on such document and the reflected light is introduced into a single unit including a lens and a colour separator so that the colour original image is separated into multiple colour component images. The colour component images are respectively read and **photo-electrically converted** into multiple signals by **CCD**'s.

The **light source** is positioned at the upper side of the **optical** axis of the lens and the **CCD**'s are disposed at the lower side of the axis. The colour separator can form several colour component images on the same plane.

USE - Colour image reader. (13pp)t

75/3,AB/3 (Item 3 from file: 350)
DIALOG(R)File 350:Derwent WPIX

003956467
WPI Acc No: 1984-102011/198417
XRPX Acc No: N84-075679
Optical cable dia measurement for quality control - uses double imaging of cable cross-section onto **photodetector** to reduce required **photodetector** size
Patent Assignee: SITTIG K (SITT-I)
Inventor: EBERLEIN G
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
DD 205519	A	19831228	DD 240488	A	19820807	198417	B

Priority Applications (No Type Date): DD 240488 A 19820807
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
DD 205519	A		7		

Abstract (Basic): DD 205519 A
The measurement of large dia. cables during continuous mfr., uses **CCD** cells for digital dia. evaluation. A **light source** (1) and an associated condenser lens (2) provide a parallel beam directed through a measuring plane (3) containing the cable, with an **optical** system (4) on the **opposite side** of the measuring plane (3) providing a double image of the cable cross-section which is directed onto a light sensitive detector (7). The double image falls on either side of the centre zone (8) of the detector (7) which remains bright, the dia. measured from the area of the detector (7) which remains unobscured. Pref. the **optical** system (4) uses an internally refractive crystal plate with a thickness which is dependent on the dia. of the cables being checked.
1/1

75/3,AB/4 (Item 4 from file: 350)
DIALOG(R)File 350:Derwent WPIX

003325004
WPI Acc No: 1982-H3018E/198225
Automatic **electro-optical detector sensing** mechanical flat key - has key shaft illuminated laterally and longitudinally from single source to aid duplication
Patent Assignee: WEBB SERVICE GMBH (WEBB-N)
Inventor: BOLZ R; HEINZE W; SCHEIDING U; SCHMALFUSS H; SCHNEIDER B; SINSEL F
Number of Countries: 011 Number of Patents: 004
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 53730	A	19820616	EP 81109450	A	19811031	198225	B
DE 3044611	A	19821125				198248	
EP 53730	B	19850918				198538	
DE 3172364	G	19851024				198544	

Priority Applications (No Type Date): DE 3044611 A 19801127
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 53730	A	G	20		
Designated States (Regional): AT BE CH DE FR GB IT LI LU NL SE					
EP 53730	B	G			
Designated States (Regional): AT BE CH DE FR GB IT LI LU NL SE					

Abstract (Basic): EP 53730 A

The detector senses a mechanical flat key, i.e. a security key or a car-door key, in order to define its type and make for cutting a duplicate key. The key (K) is inserted into the detector and its shaft (SA) is illuminated from the side and along its length using the same **light source**.

The light from the side leaves a first **optical** fibre and passes through a diffuser (4) to the shaft. The shaft's shadow is projected via prisms (6) onto a **photodetector** array (10), i.e. a line of **CCD** devices on a carriage (12). Light along the shaft is produced by two further **optical** fibres leading to **opposite sides** of the shaft. This light passes via inclined mirrors (7) and a collimating prism (8) to the same **photodetector** array.

5

75/3,AB/5 (Item 5 from file: 347)
DIALOG(R)File 347:JAPIO

05940816
PHOTODETECTOR AND **PHOTODETECTING** MODULE

PUB. NO.: 10-223916 [JP 10223916 A]
PUBLISHED: August 21, 1998 (19980821)
INVENTOR(s): UEDA CHUICHI
OGATA SHIRO
APPLICANT(s): OMRON CORP [000294] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 09-041701 [JP 9741701]
FILED: February 10, 1997 (19970210)

ABSTRACT

PROBLEM TO BE SOLVED: To form a sharp image and broaden a visual field of **photodetection** in a **photodetector** and a **photodetecting** module by decreasing the effect of the off-axis spherical aberation of the light receiving lens.

SOLUTION: A **photodetector** 10 is provided with a light receiving element 4, a light receiving lens (light-collecting element) 3 for collecting light reflected from an object 2 to be detected, and a fiber face plate (**optical** fiber bundle) 11 placed between the light receiving lens 3 and the light receiving element 4. In this case, the end face of the fiber **face** plate 11 **opposite** to the light receiving lens 3 is shaped to fit the curvature of plane of the image of the object 2 to be detected formed by the light receiving element 4, and the end face of the fiber **face** plate 11 **opposite** to the light receiving element 4 is attached to the surface of the light receiving element 4.

75/3,AB/6 (Item 6 from file: 347)
DIALOG(R)File 347:JAPIO

05654629
OPTICAL WAVEGUIDE DEVICE, ITS MANUFACTURE AND **OPTICAL** SCANNER

PUB. NO.: 09-269429 [JP 9269429 A]
PUBLISHED: October 14, 1997 (19971014)
INVENTOR(s): DEBITSUDO HAADO
APPLICANT(s): SHARP CORP [000504] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 08-080106 [JP 9680106]
FILED: April 02, 1996 (19960402)

ABSTRACT

PROBLEM TO BE SOLVED: To provide an **optical** waveguide device capable of arranging micro- lenses on the position **opposite** to an end **surface** of an **optical** waveguide with a minute pitch.

SOLUTION: An **optical** scanner is constituted of a light emission diode array, the **optical** waveguide device 13 and a **photodetector** 14. The **optical** waveguid 13 is constituted of an **optical** waveguide array 16 constituted of an incident side micro-lens array 15, a substrate 16a, the **optical** waveguide 16b and a polymer sheet 16c and an outgoing side micro-lens array 17. The **photodetector** 14 is constituted so as to consist of a light receiving element being a **CCD** and a boxy package arranging the light receiving element on its bottom part and opening its opposite part.

75/3,AB/7 (Item 7 from file: 347)
DIALOG(R)File 347:JAPIO

05632558
COLOR PICTURE READER

PUB. NO.: 09-247358 [JP 9247358 A]
PUBLISHED: September 19, 1997 (19970919)
INVENTOR(s): MORITA YUKICHI
APPLICANT(s): PFU LTD [366680] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 08-054297 [JP 9654297]
FILED: March 12, 1996 (19960312)

ABSTRACT

PROBLEM TO BE SOLVED: To improve the **photodetective** ratio of a **CCD** sensor, to accelerate signal conversion and to miniaturize a device by making picture light monochromatic light through the use of a color resolving filter and driving the color resolving filter by a piezoelectric element to suppress the loss of a light quantity.

SOLUTION: Light emitted from a **light source** 22 preventing scattered **light** by a **light source** hood 23 is reflected by an original 29, has its light axis turned by a mirror 24 and reaches a condenser lens through a slit 25. Picture light condensed by the lens 26 is resolved into a monochromatic light and only necessary monochromatic light reaches a single-row **CCD** sensor 28. A prism 32 constituting a unit 27 is freely rotatablly restrained to a housing 31 by a supporting point shaft 34 and caught between the piezoelectric element 33 and an elastic body 35 on a **side opposite** to the shaft 34. By making a current flow through the element 33, the prism 32 is rotated with the axis 34 in a center to switch monochromatic light reaching the sensor 28.

75/3,AB/8 (Item 8 from file: 347)
DIALOG(R)File 347:JAPIO

05523381
INSTRUMENT FOR MEASURING REFRACTING POWER AND RADIUS OF CURVATURE OF **OPTICAL** SYSTEM

PUB. NO.: 09-138181 [JP 9138181 A]
PUBLISHED: May 27, 1997 (19970527)
INVENTOR(s): UENO YASUNORI
APPLICANT(s): NIKON CORP [000411] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 07-321023 [JP 95321023]
FILED: November 15, 1995 (19951115)

ABSTRACT

PROBLEM TO BE SOLVED: To measure refracting power and radius of curvature with a single device by, through a to-be-detected lens, detecting each light flux from two pieces of the first **light sources**, facing each other with the first **optical** axis in between, with the first **photodetector** , for measuring the refracting power, and, through the to-be-detected lens, detecting each light flux from two pieces of the second **light sources**, facing each other with the second **optical** axis in between, with the second **photodetector**, for measuring the radius of curvature.

SOLUTION: The instrument consists of a refracting power measuring part of an X part and a radius of curvature measuring part of a Y part. Four **light sources** 1a-1d are provided with an **optical** axis p as a center. A capacitor lens 2 and a pin-hole 3 are provided on the **optical** axis, and a collimator lens 4 is assigned on the **opposite side**. A to-be-detected lens L is inserted near a focus in front of an imaging lens 5, for measuring refraction factor. Next, four **light sources** 9a-9d are provided with an **optical** axis q as a center. A capacitor lens 10 and a pin-hole 11 are provided on the **optical** axis, and a collimator lens 13 is assigned on the **opposite side**. The **optical** axis is bent with a mirror 12. A half mirror 14 is provided between the lens L and the lens 5.

75/3,AB/9 (Item 9 from file: 347)
DIALOG(R)File 347:JAPIO

05422240
IMAGE SCANNING DEVICE

PUB. NO.: 09-037040 [JP 9037040 A]
PUBLISHED: February 07, 1997 (19970207)
INVENTOR(s): SUZUKI KENJI
APPLICANT(s): CANON INC [000100] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 07-187193 [JP 95187193]
FILED: July 24, 1995 (19950724)

ABSTRACT

PROBLEM TO BE SOLVED: To make high definition and high-speed scanning property compatible and to provide the compactness and cost of an image scanning device by successively generating and adding new electric charges while moving a signal electric charge synchronously with an **optical** image.

SOLUTION: A transmissive original 11 is illuminated by a **light source** 12 for illumination, and its image is formed on an image sensor 14 by an image forming lens 13 arranged on the **opposite side** of the original 11. The original 11 is held rollers 15a and 15b formed from materials such as rubber, and the roller 15a is driven by a stepping motor 16. As a result, the film original 11 is sent while being controlled in the direction of an arrow 17a. Then, at the first line of **CCD** devices 14 as the start point of electric charge transfer, the signal electric charges stored in the past are cleared to zero by a clear pulse but the electric charges are not cleared during the different **photoelectric conversion** term but successively added and increased and the final output becomes quantity in proportion to the quantity of light of the original image. This process is different from amplification like a circuit and does not accompany any circuit noise and a high-level image signal can be provided.

75/3,AB/10 (Item 10 from file: 347)
DIALOG(R)File 347:JAPIO

04532817
IMAGE TUBE

PUB. NO.: 06-176717 [JP 6176717 A]
PUBLISHED: June 24, 1994 (19940624)
INVENTOR(s): SUZUKI HIDEKI
KONDO MINORU
WATASE YASUSHI
SUZUKI YOSHITO
APPLICANT(s): HAMAMATSU PHOTONICS KK [485540] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 04-325505 [JP 92325505]
FILED: December 04, 1992 (19921204)
JOURNAL: Section: E, Section No. 1608, Vol. 18, No. 504, Pg. 103, September 21, 1994 (19940921)

ABSTRACT

PURPOSE: To prevent fixed pattern noise from being produced by allowing a YAG crystalline plate provided so that an incoming surface for an electron is in **opposite** to the photoelectric **surface** of an input surface plate to function as a fluorescent screen and an outgoing surface.

CONSTITUTION: An incident light image converged upon an input surface 20 by a lens system 50 is **converted** into **photoelectrons** with a photoelectric surface 21 formed in the input surface 20. Photoelectrons produced from the photoelectric surface 21 are **led** to MCP 70. Photoelectrons multiplied by MCP 70 are **led** to the inner surface 30a of an output surface plate 30. The inner surface 30a which is a fluorescent screen emits light by photoelectrons and an output light image corresponding to the incident light image is produced as an **optical** image in the inner surface 30a. The output light image produced in the inner surface 30a passes through the output surface plate 30 and is emitted from an external surface 30b. Thus, since the fluorescent screen is formed in one body with the output surface plate, fixed pattern noise is not produced when light is emitted in the incoming surface for an electron.

75/3,AB/11 (Item 11 from file: 347)
DIALOG(R)File 347:JAPIO

03396505
POSITION DETECTOR

PUB. NO.: 03-059405 [JP 3059405 A]
PUBLISHED: March 14, 1991 (19910314)
INVENTOR(s): MATSUGI MASAKAZU
SAITO KENJI
APPLICANT(s): CANON INC [000100] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 01-195633 [JP 89195633]
FILED: July 28, 1989 (19890728)
JOURNAL: Section: P, Section No. 1209, Vol. 15, No. 214, Pg. 62, May 31, 1991 (19910531)

ABSTRACT

PURPOSE: To detect a relative position with high accuracy by performing the reflection type wave front alteration of **luminous** flux for detection on the surface of a 1st or 2nd body on the **opposite side** from the facing side.

CONSTITUTION: When a wafer 2 shifts in position in an X direction about a mask 1 fixed to the position detecting device, grating lenses 4 and 3 of the mask 1 and wafer 2 enter the same state as axis deviation in a lens **optical** system and the projection angle of projection **luminous** flux varies. Consequently, the incidence position of **luminous** flux on the **photodetection** surface of a sensor 6 moves on the **photodetection** surface in an X direction by a quantity corre sponding to the X-directional relative deviation quantity between the mask 1 and wafer 2. Here, the gravity center position of the **luminous** flux on the light receiving surface of the sensor 6 when the mask 1 and wafer 2 have no alignment deviation is found as a reference position and the quantity of devia tion of the **luminous** flux gravity center position from the reference position is detected at the time of detecting a position to detect the quantity of relative position deviation between the mask 1 and wafer 2 in the X direction with high accuracy.

75/3,AB/12 (Item 12 from file: 347)
DIALOG(R)File 347:JAPIO

02973046
APPARATUS FOR DETECTING ALCOHOL CONTENT

PUB. NO.: 01-270646 [JP 1270646 A]
PUBLISHED: October 27, 1989 (19891027)
INVENTOR(s): SUZUKI HIROYOSHI
APPLICANT(s): MITSUBISHI ELECTRIC CORP [000601] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 63-100484 [JP 88100484]
FILED: April 21, 1988 (19880421)
JOURNAL: Section: P, Section No. 994, Vol. 14, No. 35, Pg. 64, January 23, 1990 (19900123)

ABSTRACT

PURPOSE: To continuously and accurately detect alcohol content without delay by a small-sized apparatus even when the temperature of the apparatus is changed, by forming the contact plane with fuel on the way of an elongated light conductor and providing a light projector to one end surface of the light conductor while providing a **photodetector** to the other end surface thereof.

CONSTITUTION: The clamping angles (incident angle of propagation light) .theta. of many elongated light conductors 1 and a contact plane 2 are equal on an incident **side** and an **opposite side**, and set so as to become small toward the light conductor 1 on this side. LEDs 3 are provided to one ends of the light conductors 1 and photodiode elements 5a (array 5) are provided to the other ends thereof. When the LEDs 3 emit lights by a drive circuit, lights are transmitted to the respective light conductors 1 in equal quantity through average diffusion bodies 4. When the incident angle .theta.is smaller than the total reflection angle determined by the refractive index (large as alcohol content becomes low) of fuel and that of each light conductor 1, incident light is not propagated to each element 5a and no photocurrent flows. Therefore, the photocurrent of each element 5a is measured and the position signal proportional to the number of the element becoming a predetermined value or more in a photocurrent is outputted to make it possible to detect alcohol content.

75/3,AB/13 (Item 13 from file: 347)
DIALOG(R)File 347:JAPIO

02826483
ROM CARD READER

PUB. NO.: 01-124083 [JP 1124083 A]
PUBLISHED: May 16, 1989 (19890516)
INVENTOR(s): HORIUCHI MIKIO
APPLICANT(s): EMPIRE AIRPORT SERVICE CO LTD [491376] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 62-282257 [JP 87282257]
FILED: November 10, 1987 (19871110)
JOURNAL: Section: P, Section No. 919, Vol. 13, No. 368, Pg. 35, August 16, 1989 (19890816)

ABSTRACT

PURPOSE: To prevent information from being easily broken or rewritten by reading out recording information from a ROM card in accordance with a result based upon whether a **photodetecting** means receives light from a light incidence means or not.

CONSTITUTION: The ROM card 10 records the binarized information of '0' and '1' by the combination of **optical** fiber cables 11 obtained by pressing and smashing a part of **optical** fiber cables 11 arrayed in one row with **optical** fiber cables allowing incident light to be transmitted to the **opposite side** without deforming the incident light. Namely, beams made incident upon respective **optical** fiber cables 11 are shielded by the smashed part on a part of the cables 11 and are not transmitted to the **opposite side**, when there is no smashed part, the incident beams are transmitted to the **opposite side**. Thereby, a **photodetecting** element 31 is arranged in the vicinity of the **optical** cable **face** on the **opposite side** and whether the beams are reached to the element 31 or not is decided to record and read out optional information. Consequently, it is difficult to forge or modify the contents of a card.

75/3,AB/14 (Item 14 from file: 347)
DIALOG(R)File 347:JAPIO

02771102
CONTACT TYPE IMAGE SENSOR

PUB. NO.: 01-068702 [JP 1068702 A]
PUBLISHED: March 14, 1989 (19890314)
INVENTOR(s): OKIBAYASHI KATSUJI
TSUCHIMOTO SHUHEI
APPLICANT(s): SHARP CORP [000504] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 62-225861 [JP 87225861]
FILED: September 09, 1987 (19870909)
JOURNAL: Section: P, Section No. 891, Vol. 13, No. 279, Pg. 143, June 27, 1989 (19890627)

ABSTRACT

PURPOSE: To easily realize high resolution and color processing by arranging one-side opening ends of **optical** fibers in plural **optical** fiber groups whose other-side opening ends face an original so that the former opening ends do not succeed by the **optical** fiber groups, and arranging a **photodetecting** element **opposite** the one-**side** opening part of the **optical** fibers.

CONSTITUTION: When an original 50 arranged facing the reverse surface of a substrate 10 is irradiated with **light** from a **light source** 40 and exposed, the substrate 10 or original 50 is moved relatively at right angles to the array direction of the opening end 21a of the **optical** fiber array 2 arranged on the reverse surface of the substrate 10. The opening end 21a of the **optical** fiber array 2 obtains and supplies information on an original image to opposite **CCD** sensors 30 from the other opening ends 21b and the **CCD** sensors 30 obtain the image information and corresponding output electric signals. At this time, the **optical** fibers 21 constituting the **optical** fiber array 2 are at an equal tilt angle to the original 50 and all equal in length. Light guided by the respective fibers 21 is equal in quantity. Consequently, the high resolution and color processing are facilitated.

75/3,AB/15 (Item 15 from file: 347)
DIALOG(R)File 347:JAPIO

02709216
OPTICAL POSITION **DETECTOR**

PUB. NO.: 01-006816 [JP 1006816 A]
PUBLISHED: January 11, 1989 (19890111)
INVENTOR(s): SAKAI YASUMASA
KITAJIMA HIROSHI
YAMASHITA MAKI
APPLICANT(s): OMRON TATEISI ELECTRON CO [000294] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 62-160995 [JP 87160995]
FILED: June 30, 1987 (19870630)
JOURNAL: Section: P, Section No. 862, Vol. 13, No. 172, Pg. 12, April 24, 1989 (19890424)

ABSTRACT

PURPOSE: To reduce the size of a device and to improve the accuracy of position detection by projecting light on a code disk which is **optically** readable and where codes indicating absolute position information are recorded, and **photodetecting** its transmitted signal light or reflected signal light.

CONSTITUTION: The rotary disk 11 is divided at constant angle intervals (pitch P) and Gray codes indicating absolute angle position (absolute number) are recorded at the respective divided parts in their recording zone R. Light emitted by a **light source** 1 passes through the slit of a slit plate 3 and is projected on the recording zones R of the rotary disk 11. This projection light is converged in the peripheral direction of the rotary disk 11 and expanded radially to become long. This slit projection light illuminates a one-pitch range. The light transmitted through the rotary disk 11 is **photodetected** by a **CCD** 4 arranged on the **opposite side** from the **light source** 1 across the rotary disk 11.

75/3,AB/16 (Item 16 from file: 347)
DIALOG(R)File 347:JAPIO

02510787
SOLID-STATE IMAGE PICKUP DEVICE

PUB. NO.: 63-127687 [JP 63127687 A]
PUBLISHED: May 31, 1988 (19880531)
INVENTOR(s): KATANO MITSUSHI
ATSUTA YASUSHI
APPLICANT(s): MATSUSHITA ELECTRIC IND CO LTD [000582] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 61-274470 [JP 86274470]
FILED: November 18, 1986 (19861118)
JOURNAL: Section: E, Section No. 668, Vol. 12, No. 385, Pg. 17, October 14, 1988 (19881014)

ABSTRACT

PURPOSE: To improve the accuracy and to prevent the occurrence of color slurring due to a change in ambieint temperature by forming a thin film electrode pattern to a radiation face of an **optical** component and connecting a solid-state image pickup element to the electrode pattern conductively and fixing a **photodetecting face** in **opposition** to the radiation **face** thereby providing a prism reinforcement member fixedly to both sides of a color separation prism.

CONSTITUTION: Solid-state image pickup element mount members 132-134 are used and mount faces 132A-134A are aligned to be orthogonal to light axes 125-127 of a radiated **luminous** flux and used as reference faces. The solid-state image pickup components 128-130 are slided on the mount faces 132A-134A to make alignment so that images of the three solid-state image pickup elements are overlapped. A **photodetection** face 33a of the solid-state image pickup element 33 and the incident face 31a of the **optical** component 31 are bonded with high accuracy while keeping in parallel, then the alignment with high accuracy not susceptible to the effect the processing of the color separation prism 122 and the error in assembling is attained. Then the relative position change due to thermal expansion hardly takes place.

75/3,AB/17 (Item 17 from file: 347)
DIALOG(R)File 347:JAPIO

01602325

IMAGE FORMING DEVICE

PUB. NO.: 60-080825 [JP 60080825 A]
PUBLISHED: May 08, 1985 (19850508)
INVENTOR(s): MIYAKE HIROYUKI
KASHIWARA AKIHIRO
SONOBE HIROSHI
APPLICANT(s): CANON INC [000100] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 58-188339 [JP 83188339]
FILED: October 11, 1983 (19831011)
JOURNAL: Section: P, Section No. 387, Vol. 09, No. 224, Pg. 17, September 10, 1985 (19850910)

ABSTRACT

PURPOSE: To enable realization of multistages of variable power projection with simple constitution by forming a small-diameter imaging element array which forms images of different magnifications in such a way that the array can be selectively and freely attachably and detachably exchanged to and from the main unit of a device.

CONSTITUTION: An **optical** system 40 for exchange is disposed with an imaging element array 42 in an outside body 46 of a cylindrical shape by matching the longitudinal direction of the body 46 and the longitudinal direction of the array 42. The length of a reflecting member 45 formed to the rear end thereof is set to each of the magnifications of the array 42, for example, l(sub 1), l(sub 2), l(sub 3). Photosensors A, B, C of a reflection type are disposed in the main unit in accordance with said lengths. The image forming magnifications of the system 40 can be detected by detecting respectively the light reflected by the member 45. A slit slt attached with glass 41 for dust-proofing is longitudinally formed to the body 46 in the position **opposite** to the **photodetecting surface** of the array 42.

75/3,AB/18 (Item 18 from file: 347)
DIALOG(R)File 347:JAPIO

01329158
READER OF ORIGINAL SHEET

PUB. NO.: 59-040758 [JP 59040758 A]
PUBLISHED: March 06, 1984 (19840306)
INVENTOR(s): NAGANE HIROMICHI
APPLICANT(s): CANON INC [000100] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 57-149935 [JP 82149935]
FILED: August 31, 1982 (19820831)
JOURNAL: Section: E, Section No. 251, Vol. 08, No. 131, Pg. 25, June 19, 1984 (19840619)

ABSTRACT

PURPOSE: To cope simply with a trouble such as jam of an original at inexpensive cost, by separating a reading **optical** unit from the main body of a device.

CONSTITUTION: A reflecting light (r) of an original 1 irradiated by a **lighting source** 6 is reflected horizontally with the original 1 with the 1st mirror 27 and in opposite direction of a carrying direction of the original 1, and reflected at a right angle to the carrying direction of the original 1 with the 2nd mirror 28 and the image is formed on a **photo detector** 9, e.g., a **CCD** with a lens 8. Components located at the upper part from the carrying original 1, a lighting **optical** system 6, reflecting **optical** systems 27, 28, an image forming **optical** system 8 and a **photoelectric converting** section 9 are all provided on a printed board 31 and split completely from the surface on which the original 1 is carried. Further, a fulcrum is provided at a depth being **opposite side** to the front side of a reading unit 22, and the entire unit 22 is turned manually in a direction vertical to the original carrying direction, allowing to switch the carrying plane of the original 1 as a split plane.

75/3,AB/19 (Item 19 from file: 347)
DIALOG(R)File 347:JAPIO

01171118
FOCAL STATUS DETECTOR FOR SINGLE-LENS REFLEX **CAMERA**

PUB. NO.: 58-108518 [JP 58108518 A]
PUBLISHED: June 28, 1983 (19830628)
INVENTOR(s): NAKAJIMA YUKIO
APPLICANT(s): OLYMPUS OPTICAL CO LTD [000037] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 56-208351 [JP 81208351]
FILED: December 23, 1981 (19811223)
JOURNAL: Section: P, Section No. 225, Vol. 07, No. 216, Pg. 51, September 24, 1983 (19830924)

ABSTRACT

PURPOSE: To remove adjustment between an eye observation **optical** system and a focus **detecting optical** system by forming a pair of reflecting surfaces inclined in the reversed directions each other on a finder screen to penetrate light through a semi-transmission part of a main mirror and form the image on a pair of **photodetector** arrays.

CONSTITUTION: Light passing through a photographing lens 1 is deflected to a finder screen 3 by a main mirror 2, the deflected light is reflected by a pair of reflecting surfaces 3a, 3b inclined in the reversed directions each other from an image formation surface 3e and the reflected light forms an image on a **photodetecting** device 8 consisting of two **photodetector** arrays a(sub 1)-a(sub n) and b(sub 1)-b(sub n) by an image formation lens 7 fitted to the lower part of a **camera** body through the semi-transmission part 2a formed on the center of the main mirror 2. The reflecting surfaces 3a, 3b are formed as halfmirrors along the **opposite side** edges of the inclined surfaces and inclined surfaces 3c, 3d inclined in the reversed directions against the reflecting surfaces 3a, 3b at equal angles on the border of a plane including an **optical** axis are intersected.

75/3,AB/20 (Item 20 from file: 347)
DIALOG(R)File 347:JAPIO

01167730
LENS-SIDE INFORMATION TRANSFER MECHANISM BY **OPTICAL** FIBER

PUB. NO.: 58-105130 [JP 58105130 A]
PUBLISHED: June 22, 1983 (19830622)
INVENTOR(s): OKURA ZENICHI
KAWAMOTO SHINSUKE
APPLICANT(s): ASAHI OPTICAL CO LTD [350041] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 56-204216 [JP 81204216]
FILED: December 17, 1981 (19811217)
JOURNAL: Section: P, Section No. 223, Vol. 07, No. 210, Pg. 96, September 16, 1983 (19830916)

ABSTRACT

PURPOSE: To obtain the same reliability as an electric contact and to facilitate manufacture, by returning light transmitted from a **camera** side through **optical** fibers to the **camera** side according to lens-side information in bit.

CONSTITUTION: **Optical** fibers 14a-20a fixed to the mount 10 of a **camera** body side and having light emitting elements on end **surfaces** on the **opposite side** of the mount 10 supply steady light I(sub 0) to a lens side. The light passed through those **optical** fibers is returned to the **camera** body side through **optical** transmission systems 14c and 16c in a lens for specifying information in bit positions on the basis of the specific value of stop of the lens, and automatic/manual switching information, etc., and lens-side information is transmitted to an arithmetic circuit by **optical** fibers 14b-20b coupled with **photodetecting** elements at end parts.

75/3,AB/21 (Item 21 from file: 347)
DIALOG(R)File 347:JAPIO

01140720
OPTICAL SIGNAL GENERATING DEVICE

PUB. NO.: 58-078120 [JP 58078120 A]
PUBLISHED: May 11, 1983 (19830511)
INVENTOR(s): TAKEI KATSUMORI
APPLICANT(s): SEIKO EPSON CORP [000236] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 56-176717 [JP 81176717]
FILED: November 04, 1981 (19811104)
JOURNAL: Section: P, Section No. 213, Vol. 07, No. 172, Pg. 111, July 29, 1983 (19830729)

ABSTRACT

PURPOSE: To obtain writing light having stable light energy density, by providing a **photodetector** on the **opposite side** of a **light source** against a liquid crystal light valve, and controlling the **light source** turining-on power by an output of the detector.

CONSTITUTION: **Light** from a **light source** 301 is modulated by a liquid crystal light valve 302 driven by a driving device 308. An **optical** signal 310 which does not contribute to writing between modulated optcial signals 309, 310 is detected by a **photodetector** 305, and by controlling an electric power supply for a **light source**, through a controller 306 by its output, writing light having stable light energy density is obtained.

75/3,AB/22 (Item 22 from file: 347)
DIALOG(R)File 347:JAPIO

00571983
COLOR-SEPARATION **OPTICAL** READER

PUB. NO.: 55-059583 [JP 55059583 A]
PUBLISHED: May 06, 1980 (19800506)
INVENTOR(s): OTSUKA TOMOYUKI
APPLICANT(s): FUJITSU LTD [000522] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 53-132244 [JP 78132244]
FILED: October 27, 1978 (19781027)
JOURNAL: Section: P, Section No. 20, Vol. 04, No. 103, Pg. 4, July 23, 1980 (19800723)

ABSTRACT

PURPOSE: To obtain a color-separation **optical** reader which can reduce the error ratio when reading by reading out the information of the data sheet through separation into three primary colors of the light.

CONSTITUTION: The **luminous** flux of the white beams generated from **light source** 1 are focused by focusing lens 2 and then enters incident end 4 of incident side fiber group 3. Emission end 5 of group 3 and incident end 9 of **opposite side** fiber group 8 are arranged in a row covering over width w of pattern part 7 and with each fiber paired. And tne 3-primary color separation mechanism comprising thin film band rejection filters 11, 14 and 17 for the blue, green and red colors each plus thin film BPFs 12, 15 and 18 for the blue, green and red colors each and three units of **CCD photo detectors** 13, 16 and 19 opposing to the above color separation mechanism are provided at emission end 10 of group 8. As a result, the signals sent from each part in the direction of width w of part 7 are separated into three primary colors as data sheet 6 passes under the **optical** fibers, thus obtaining the electric signals according to the intensity of the separated colors.
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